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ANNUAL REPORT

OF THE

AGRICULTURAL DEPARTMENT

FOR THE YEAR

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Annual Report of the Agricultural Department for the Year 1954

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ANNUAL REPORT OF THE AGRICULTURAL DEPARTMENT FOR THE YEAR 1954

PART I.

POLICY.

There was no vital change in overall policy, which continues to be based on the two main principles of attaining optimum land use, and a progressively higher standard of living amongst the farming community.

2. To the ultimate fulfilment of these principles, the following must all contribute:—

(1) the preservation of the land and its natural resources;
(2) the proving of the land's potential;
(3) the improvement of food crop and livestock production and the achievement thereby of as great a degree of self-sufficiency as is practicable;
(4) the improvement of economic production of export crops of good quality; and
(5) the encouragement of local secondary processing industries for agricultural products.

3. Whilst, however, such bald policy statements are important, and, indeed, may well be common from one country to another, it is their direct and successful implementation which is of greater concern to the farmer; for British Honduras, which has experienced many agricultural disappointments and uncertainties in the past, it is of particular importance therefore that they should be carefully assessed and proven before being implemented.

4. Unless crops can be grown on the most suitable soils, for organised visible markets and unless their production can be both economic, of good quality and competitive, no written policy statements are of great value.

5. It is with this objective therefore that the agricultural policy and development plans of the past few years have been designed, and the first prerequisites determined.

6. The important two-year land use survey of the country has been completed, and the resulting report is now in final preparation; on the basis of this report planning for more detailed agricultural development can be founded, and from the information now being obtained through numerous "Scatterplot" trials and experiments, the potential be determined.

7. Concurrently extension staff are being trained to play a more valuable part in the dissemination of information and results, and pilot schemes for specific crops are under way.

8. All this has been made possible through C.D. and W. assistance with the Development Plan Part II, which only became fully operative in 1953, and which is now to be extended in the Part III Plans recently approved for the period 1955–1958, and which are subject to a progress review at the end of two years.

9. The latter plans include provision for a Land Commission to investigate local tenure problems, which are of the greatest importance to future land use and development—in fact to the successful establishment of permanent agriculture.

10. The pattern of what this future development can be is becoming ever clearer, and it is now probable that a limited number of major crops will be of primary importance. These could include the three staple local foods—rice, maize and beans, and citrus, sugarcane, cacao and cattle.

11. Many problems however yet remain to be resolved, if economic and organised marketing is to be attained, and it is on these secondary yet equally important factors that immediate work will now concentrate: such as the proving of better cultivation techniques, and of more permanent systems of farming; and to the solution of which better transport and processing facilities and adequate labour can also contribute.

Weather Conditions.

12. 1954 was undoubtedly a wet year, with totals well above average in all areas except for Toledo district in the South; whilst this was not as damaging to agriculture as to forest operations, the distribution was unfavourable and heavy rains tended to occur at inopportune times. As a result planting burns were poor, and flood damage occurred both during the growing season and hampered the harvest, particularly for maize, which fell below the normal for recent years.

13. Small localised storms caused damage at Barranco and Punta Gorda in June; a rainfall of over ten inches in one day was recorded in the Stann Creek Valley on the first of July with some flooding, when the Belize and Sibun Rivers were also in high flood.

14. On the 26th September warnings were issued that a small tropical storm was centered a few miles off the coast and to the south east of Stann Creek. "Gilda" subsequently crossed the coastline in the same area doing comparatively little damage to coconuts and plantains; winds were estimated at 40–50 m.p.h.

15. On the 7th October, whilst hurricane "Hazel" was at large in the Central Caribbean, ten and a half inches of rain fell in Corozal, where severe flooding occurred along the Hondo River and in the Paraiso area.

16. As a result of such abnormal weather conditions, it is somewhat surprising that apart from maize, other crop harvests were reasonable. Livestock, indeed, benefitted from the comparative absence of a 'dry' early in the year, and grazing conditions were better than for several years.

17. The rainfall records of the 43 reporting stations are given in Appendix I, together with temperature and humidity figures from Belize and Stann Creek.

Crops: General.

18. Two summary crop surveys were prepared during the year for sugarcane in the Northern Districts, and for Citrus in the Stann Creek Valley; the latter was produced for the Citrus Fact Finding Mission which visited British Honduras in December.

19. A number of individual crop history reports are also in preparation.

20. The adverse effect of the heavy rains has already been mentioned, particularly for corn, which is likely to be in short supply in all areas, with Toledo district the worst affected.

21. Flower setting of the citrus crop was also reduced, and whilst the actual crop improved on early estimates, it was well below the 1953 record for grapefruit, although increasing orange acreages coming into bearing in part masked this effect.

22. The 1953/54 Red Kidney Bean Crop was however ideally suited by conditions and was a record one with yields averaging 1,200 lb. per acre in some areas. The 1954/55 crop, planted on an even greater scale has not been so well served, and overall yields are likely to be poorer.

23. The Sugar Cane crop also disappointed, but estimates for the new crop, with new acreages coming into production, are more encouraging.

24. Coconut yields have improved, but the trade has suffered more from marketing difficulties, which locally continue to beset minor ground provisions and vegetables also.

Imports And Exports.

25. Details of the Agricultural imports and exports are given in Appendix II; the main variations from the previous year have been:—

Imports:

(*a*) the noteworthy increase in value of *breeding cattle*, reflecting the efforts of cattle owners to improve their herds;

(*b*) *Rice* imports still attain nearly half a million dollars worth per annum; this it is hoped can gradually be replaced by local production, if the pilot mechanised scheme recently started proves successful;

(*c*) the very significant fall in imports of *Red Kidney Beans* from $108,000 to $17,000 worth due to increased local plantings and a very favourable crop.

26. *Exports*:

(*a*) The complete decline in exports of *bananas and plantains* consequent upon the abandonment of the C.D.C's venture in the Stann Creek Valley;

(*b*) the ever increasing importance of the *citrus industry* to the country's economy, with grapefruit products advancing from $807,000 to $988,000, and orange from $55,000 to $132,000 and the total for the first time surpassing a million dollars. Whilst exports of fresh grapefruit declined slightly, juice exports were quadrupled, and as more new orange groves come into bearing the juice and concentrate production is rapidly increasing.

(*c*) After a favourable season in 1953, increased exports of *Maize* to Jamaica were possible.

(*d*) In spite of lower prices for whole *coconuts* exports climbed back to 2 million.

(*e*) The C.D.C.'s production of *Ramie* fibre declined because of acreage reduction and marketing difficulties.

Citrus.

27. The Stann Creek Valley remains the centre of the citrus industry, which is now of the greatest importance to the local economy; consequently the appointment and visit of the Fact Finding Mission in December was of the greatest concern not only to all those who have established plantations and interests in the processing factory, but also to the country as a whole. It would, indeed, be catastrophic if this industry, which now exports products worth over $1 million, were to suffer, when orange production, in particular, is only now commencing and will increase very considerably in the next few years as the groves come into bearing. The Mission's report is therefore awaited with anxiety.

28. A further 291 acres of oranges and 4 of grapefruit were planted in the Valley during the year, of which 201 acres of oranges were put in by two of the largest growers. The Department's survey puts the total acreages at 780 for grapefruit, and 3,104 for oranges compared to 812 and 3,567 claimed by the Citrus Growers Association; part of the discrepancy in these figures is probably due to estimates being based on 100 trees per acre, whilst 201 acres of oranges are actually planted at 200.

29. All but 8 acres of grapefruit are in full bearing, whereas only 59 of oranges have yet reached this stage, and 531 acres are beginning to bear.

30. The total acreage is divided up amongst 64 farmers, with the Citrus Company itself having 1,581 acres of oranges (50%) and 482 acres of grapefruit. The B.H. Fruit Co. (C.D.C.) has 506 acres of oranges, which required considerable supplying during the year, and H.T.A. Bowman Ltd. has 142 acres of grapefruit and some 300 acres of oranges.

31. Cultivation practices continue to improve, and many farmers are now following the Citrus Company's lead in keeping their plantations cleaner, and in carrying out some pruning. The Company also attempted to graze sheep in one orchard but abandoned this because the grazing was too poor.

32. Some trees have continued to die back from Gummosis and allied causes, largely where drainage conditions are inadequate.

33. The incidence of Mexican fruit fly (*Anastrepha ludens*) was very much higher than usual and caused considerable concern to the quality of fresh and section fruit. Spraying for control is considered to be too expensive at present, and the wet conditions no doubt complicated proper grove sanitation.

34. The grapefruit crop has been as follows in the last three seasons:—196, 778; 122,279; and 259,647 units. (*Note*: a unit is a 90 lb. box nett, but the first two figures are approximate as unit size was variable). After the last, a record crop, the 1954/55 one is likely to be considerably lower, estimated at 200,000 units. Up to December the factory had received 137,606 units.

35. The orange crop for 1953/54 totalled 24,048 boxes of 90 lb. each, and to the end of December, with the bulk of the 1954/55 crop still to be harvested, receipts totalled 13,136 units.

36. The Citrus Company's record of production for the year is as follows:—

	Fresh Fruit Bruce Boxes	Sections Cartons A/2	Juice Cartons A/2	Juice Cartons A/10	Juice barrels	4/1 Concentrate barrels	6/1 Concentrate barrels 42 galls	Hicell barrels 42 galls	Oil cases 50 lb.
GRAPEFRUIT: Manufactured and carry over ..	33,211	176,506	11,346	66,451	1,784	326	—	144	136
ORANGES: ..	—	—	33,193	70	—	—	158	55	155

Note— 1 case A/2 Juice, Grapefruit or Orange, equals 3 Imp. galls.
1 case A/10 Juice, Grapefruit or Orange, equals 4 Imp. galls.
1 barrel equals 42 Imp. galls.
1 gall. of 4/1 Grapefruit Concentrate equals 4 galls. natural strength juice which equals 1 case A/10.
1 gall. of 6/1 Orange Concentrate equals 6 galls. natural strength juice which equals 2 cases A/2.
3 gallons of Hicell is reckoned to be equal to 1 case A/2.
1 case of sections is reckoned to be equal to 3 galls. juice or 1 case fresh fruit.

37. In the other Districts, citrus production is of less importance, although acreages are increasing in the Corozal area, and one large estate has been planted up to oranges in the Cayo district over the last two years.

38. Some 6,000 plants were purchased from the Agricultural Department, by growers in the Corozal district, and 759 in Orange Walk. Increased plantings by small farmers in the Benque Viejo area of Cayo District are also reported.

39. 3,400 crates of fruit were shipped by Corozal growers to the Stann Creek factory for processing.

40. In Belize district, although of comparatively minor importance, fruit provide a valuable cash crop for growers supplying the Belize market.

41. Damage to fruit by birds, and to trees by Wee Wee Ants (*Atta cephalotes*) is recorded.

42. The Department's nurseries at Central Farm and Stann Creek supplied 3,672 and 28,000 budded plants to growers respectively during the year.

43. Yield figures and other information quoted for the Fact Finding Mission are summarised in Appendix III.

Coconuts

44. Yields improved, probably as a result of the heavier rains, and the export of whole nuts, despite poorer prices, regained the two million level, around which they have hovered through the last ten years.

45. Reliable markets were however none too easy to find, except in the United States in the pre Christmas months. Shipments to Venezuela and Panama were tried by one exporter. Advice from England indicates that British Honduras whole nuts are more acceptable than West African, but that consignments have suffered from insufficient grading and have been too long in transit from tree to market.

46. Local discussions are once again taking place to see whether a more comprehensive producers organisation can be set up, which can be tied into a processing factory.

47. The Department has encouraged one producer and one Cooperative organisation to erect Malayan type copra driers, and the former obtained 60% Grade I on the first run; the latter was less successful owing to shortage of shell and consequent poor drying.

48. Production continues to be of importance in the Coastal and Caye areas where surveys have been carried out on acreages, which are estimated as follows:—

	Acres	
Corozal	924	
Belize	586	plus 1 estate which is increasing from 1,500 to 2,000 acres;
Ambergris Caye and Caye Caulker	3,229	
Stann Creek	1,826	
Turneffe Caye	580	
Toledo	331	

49. In the Stann Creek Carib Reserve and ten-acre holding areas there are 416 acres representing 405 holdings of which 196 acres are in bearing with yields estimated at 40 nuts per tree or less; by contrast one well selected and well cared for cocal at Mullins River is estimated to give 200 nuts per tree.

50. In the Belize district many nuts continue to be planted on unsuitable soils and generally cultivation standards remain poor, though some mulching, draining and cleaning is being done by the better farmers.

51. Apart from a few individuals, the condition of plantations on Ambergris Caye remains as poor as it was at the time of the last survey three years ago.

52. Red Ring and the Coconut Beetle (*Rhyncophorus palmarum*) continue to take a toll in most areas.

53. The Corozal Cooperative shipped 68,100 nuts to New Orleans, and 4,000 lb. Copra to Belize; the Blair Athol—South Stann Creek plantations produced 450,000 nuts, and Sittee growers shipped 200,000 nuts to Belize during the year.

54. Prices in this area ranged from $3.50 to $4.80 per 100 nuts, and $4.50 for a case of 12 bottles of oil.

Bananas and Plantains

55. Although the C.D.C. abandoned their project for growing Lacatan bananas in the Stann Creek Valley in 1953, many farmers still continue to hope that production will somehow again restart; in this hope they have now received some encouragement by the advent of an American firm which has leased lands from the Government in the Waha Leaf Creek area of Stann Creek district. Here 300 acres have been planted up with Gros Michel, but because of the heavy rains, clearing and ingress difficulties hampered the early development and growth has been poorer than was anticipated.

56. A feeder road is being constructed to link this area with the sea at Mango Creek, and the Company is proposing also to buy bananas from other growers besides extending its own acreage. An agreement is being drawn up with the Government, which also includes provision for the Company to grow other permanent crops, such as Cacao, through their bananas.

57. Both this Company, and the Citrus Company who have planted some trial bananas on their new Roaring Creek estate are hopeful that they can control Cercospora Leafspot disease. The former are also taking care to avoid introducing Panama disease. Nonetheless it is the Department's opinion that Banana production will be comparatively limited and in view of past experiences and the known difficulties, its expansion should be regarded with extreme caution.

58. Plantains continue to fluctuate between glut and scarcity, and suffered both from wind and flood damage; some Cayo district producers are however finding a useful outlet for their surplus as pig feed.

Ramie—*Boehemeria Nivea*

59. Only one private farmer is growing a limited area of ramie in addition to the C.D.C's production on their Barton Ramie estate; as a result of expert recommendations the acreage of the latter was reduced to 65 acres, and new varieties introduced. Whilst yields have shown considerable improvement approaching 600 lb. fibre per acre and production costs have been reduced, it is understood that the Corporation are finding difficulty in obtaining a sufficiently lucrative market to offset their high overheads. The future of this venture continues to be obscure therefore.

Sugar

60. Although a new mill has been installed in the Pembroke Hall factory for the 1955 crop production, difficulties are still wholly unresolved, on account of inadequate boiling house capacity for the improvement of which the capital required is not yet available.

61. Increased cane plantings continue with the existing acreage now 3,416, and that for the 1956 harvest estimated at 5,241; it is estimated that the existing export quota of 5,000 tons should be filled by 1956; further plantings are however having to be restricted because it is not

known whether the country's right to the original quota of 25,000 tons will be upheld; no decision having been taken on this point at the 1954 review of Commonwealth quotas.

62. Harvesting of the 1954 crop began in mid January and was completed in May; production figures provided by the factory compared to those obtained in 1953 are as follows:—

	1953	1954
Tons cane ground	24,672.11	21,317.95
Tons sugar made	1,811.61	2,413.43
Tons Cane/Tons Sugar, 96 test	9.25	8.70

63. The membership of the Sugar Cane Growers Cooperative increased by 98 to 225 during the year; although the Department's survey carried out in August listed 196 farmers in all, scattered through twenty five village areas, and with the largest concentration to the North of the factory.

64. The overall farm size average is estimated at 26.74 acres and the existing units as follows:—

	Acres						
	0-10	10-25	25-50	50-100	100-200	200-300	300
No. of farmers	118	40	25	5	4	1	3

65. Average yields are now considered to be between 15 and 20 tons per acre, and with three large properties improving their yields on new areas, besides the improving standards of cultivation amongst all farmers, should gradually increase yet further.

66. The survey also showed that suitable lands for expansion are becoming short to the North and West of the factory, unless the Ramonal-Sapote area can be opened up by new feeder roads; and that major expansion will thereafter have to be to the South. Transport costs even now take up 35% of the cost of production, and will become a limiting factor unless trailers or other means of reducing costs per ton mile can be introduced.

67. Three variety trials have been establised at Louisville, Caledonia, and Orange Walk incorporating newer varieties from Barbados, which could if suitable supersede POJ 2878 which continues as the staple pro tem.

68. Following upon the promising responses obtained from Phosphate dressings at Estrella in 1953, fifty fertilizer trial plots were laid down throughout the area this season, to determine whether phosphate and sulphate of ammonia dressings will be economic. These trials are being conducted with the cooperation of the factory and the growers themselves. Unfortunately attempts to organise the increased provision of fertiliser loan supplies against the 1956 crop have not yet been found possible.

69. A serious outbreak of Froghopper, *Aeneolamia postica jugata* (*Fowler*) affected the Buena Vista—Pembroke Hall area during September and October. One farmer carried out preventive dusting with Agrocide, and it is hoped to lay down more widespread trials in 1955.

70. In the Toledo district, where four small mills were operating to make crude brown sugar, a number of farmers are still hopeful that production could be profitably increased, and that a small central factory could be installed. This is not thought to be a practicable proposition at the present time. A fifth mill converted all juice into rum. Production figures for these four mills were: 123,000 lb. brown sugar and 5,800 gallons molasses, with the sugar selling at 7 cents per lb. wholesale and 9 cents retail.

71. There were 8 distilleries operating during the year, 5 in Corozal, 2 in Orange Walk and 1 in Toledo. The Northern distilleries produced 20,748 liquid gallons rum, equivalent to 32,015.204 proof gallons.

Cacao

72. Despite the favourable World market for this crop, it is not yet possible to record any progress in initiating an industry here; small areas occur in Toledo and in Stann Creek Districts, and some sun-dried beans are used locally.

73. The C.D.C's 35 acres at Alta Vista is growing favourably, and has given a good flush with I.C.S. 60 the most promising. Some budding has been carried out successfully from this clonal material.

74. Meanwhile the Department has submitted a pilot scheme for approval for a grant of C.D. & W. funds, and is preparing a nursery on the C.D.C. property at Kendal in the Sittee River area, where clonal material on order from St. Vincent can be established.

75. The delays in starting this scheme, and therefore of being able to encourage wider production, are a sad disappointment, with a crop which is known to grow well, and for which the future market would seem to be as good or better than for most tropical products. Nevertheless it is hoped that 1955 will at long last see a start to that production which the late Dr. Pound recommended in 1948.

Pineapples.

76. Acreages continued to expand in the Corozal area to 278 in all, whence 220 tons were shipped to Belize and Stann Creek for canning, compared to 55 tons in 1953. The average weight of fruits harvested rose from 2.85 to 3.51 lb. 48% of the plants are estimated to be bearing compared to 18% last year.

77. A small number of Smooth Cayenne and Natal Queen varieties have been supplied to the members of the Growers Association for observation and trial in comparison to the predominant Horsepine and Sugar Loaf now grown.

78. Transport and marketing difficulties continue to hamper the successful establishment of this industry, which must secure high quality if it is to be able to compete with an expanding World production. Sample cans were submitted for report through the Colonial Products Laboratory, but unfortunately owing to poor sealing were not altogether satisfactory, although Sugar Loaf and Smooth Cayenne were recommended for further trial and report in 1955.

79. Growers in Belize and Toledo districts, though more haphazard in their methods, depend to some extent on local markets for an income from this crop; several citrus growers in Stann Creek, including the Citrus Company have established some through their groves or on hillsides.

80. The small Belize cannery ran into financial difficulties and its quality of production suffered as a result; the Citrus Company in Stann Creek also canned some 64 tons of the crop as follows:—

Slices	.. cases A/2 ..	904
Chunks	„ „ ..	321
Juice	„ „ ..	219
Crush	„ „ ..	—
Total	..	1,444 cases, plus 698 carried over from 1953.

81. Discussions continue as to whether a canning plant can be installed in the Corozal area, but this is unlikely to be possible for the 1955 crop. There is no doubt however that the heavy transport losses at present incurred en route to Belize and Stann Creek could be considerably reduced with more careful handling and packing. In this respect the lack of suitable locally made containers is seriously felt.

Rice.

82. The newly appointed Rice Officer arrived in April, and surveyed the various production centres before making recommendations for pilot schemes in the Boom area of Belize District, and at the Dump in Toledo.

83. Owing to the heavy rains, clearing and planting burns were adversely effected and weed competition decreased crop yields in all areas. "Smut" was also prevalent in the Belize District.

84. The early crop of B.H. Creole was most seriously affected, whilst the later B.G. 79, although giving better yields, was seriously adulterated with other varieties and red rice, particularly in the Toledo district, where the Department rogued 17 acres of B.H. Creole for seed distribution in 1955. Attempts to rogue an area of B.G. 79 showed only 32% B.G. 79, 32% Lead, 24% other varieties and 12% "red" rice; however in a field belonging to another farmer who had been encouraged to do his own rogueing in the past, 94% purity was obtained.

85. Acreages of various production areas were estimated to be:—

Toledo District	San Pedro Columbia	283	
	Crique Sarco—Dolores	3	
	Barranco area	57	
	Monkey River	165	
	Punta Gorda	527:	1,035 total
Stann Creek District	Gales Point	25	
	Sittee River	20	
	Stann Creek	11 :	56 total

86. Yields were in general poor, and in many areas averaged only about 1,000 lb. padi per acre.

87. Once again private buyers operated in Toledo district, purchasing and shipping to Belize 3,392 lb. padi; the Marketing Board's purchases for the period 1st July 1954 to 28th February 1955 totalling 495,228 lb. padi compared to 592,636 lb. in 1953/54.

The guaranteed purchase prices were unchanged at $5.50 per 100 lb. at 13–15% moisture, $4.90 at 15–17%, $4.30 at 17–18% and $3.00 at 18% plus.

88. In addition to the Marketing Board's Belize mill, six small mills operated in Toledo, and three in Belize district.

89. With assistance from the Minor Economic scheme fund, the Marketing Board obtained a *Tullos* thresher from Trinidad for trial by a group of farmers at Patchakan in Corozal District. This threshed 2,258 lb. padi in 5 hours 40 minutes for one gallon of fuel, and required 3–4 men to operate. This performance, apart from some minor modifications necessary, was considered to be satisfactory.

Maize.

90. The heavy rainfall adversely affected the corn crop yields in all areas by preventing efficient clearing and burning, with resultant heavy weed competition. It was therefore one of the worst seasons for some years, and although some surplus was early on offer for sale to the Marketing Board, there is a strong likelihood of shortages before next season's crop can ripen; also short supplies will necessarily lead to a reduction in the pig and poultry population.

91. In the Cayo district despite an estimated acreage increase of 25% to nearly 5,000 acres, yields fell by nearly 50% to 600 and 700 lb. per acre.

92. Counts taken from four sample plots in the Northern Districts gave the following figures:—

Locality	Cob yield/acre lb.	% damaged by weevils and other insects
Corozal	864	20%
Orange Walk (*a*)	2,232	2.3%
Orange Walk (*b*)	2,032	0.4%
Yo Creek	2,976	5.2%

93. Marketing Board purchases in the period 1.7.54–28.2.55 totalled 1,219,885 lb. compared to 2,871,217 lb. in 1953/54. Guaranteed prices remained unchanged at $3.25 per 100 lb. Belize and $3.00 at rural buying centres.

94. Some farmers have been trying introduced American hybrid seed and a Jamaica selection with some success; the Department is also engaged in similar trials and selections from the local strain.

Beans.

95. After the record crop which was harvested early in the year, and which had been favoured with ideal growing conditions, it was not surprising that the 1954/55 plantings should again increase, particularly as the guaranteed price of $18.00 per 100 lb. was maintained which enables growers to secure a good return. In fact the 1953/54 crop purchases were for the first time equivalent to a year's requirements, and a three months carry-over stock is likely to be held when the new crop comes in.

96. In the Cayo district the acreages for the two crops were estimated at 700 and 950 respectively; in Stann Creek it has doubled to 100 acreas; and in the Toledo district is 480 acres.

97. Marketing Board purchases have been:—

1.7.53-30.6.54 .. 704,532 lb.
1.7.54-28.2.55 .. 72,389 lb., but the latter buying season is still far from completed.

98. Some trouble was experienced from bacterial and fungal diseases in the Cayo area, where farmers who do not wish to have to dust with expensive deterrents will have to be careful of field sanitation and rotate their crops. Rusts, Anthracnose and Mildew can be of serious importance, and a discolouration of the primary leaves emerging from the seed which occurred in December was attributed to mite damage; this however subsequently disappeared, and did not affect plant growth.

99. During the visit of the Colonial Liaison Officer to the Pest Infestation Laboratory (Slough), to the northern districts in May, numerous bean and bruchid samples were collected, and as for Corn, it is plain that storage losses in farm cribs can be considerable, if no precautions are taken.

Root Crops.

100. Cassava remains an important crop and food for the Carib population, roots of the bitter variety selling at 4 cents per lb. and starch at 35 cents per quart in Stann Creek.

101. Yams, Cocoes and Sweet potatoes are produced only on a limited scale, and frequently demand exceeds supply; yams sell at times in Belize market for prices in excess of imported Irish Potatoes. It is to be presumed that the growing and harvesting of root crops is an unpopular pursuit amongst a community which has little use for the hoe, fork and spade.

Vegetables.

102. Once again vegetable production is reported as a tale of gluts and shortages particularly for tomatoes and cabbages; excellent crops are grown by those with the requisite skill, water and patience, of whom there are praiseworthy examples in all districts. Their problems are however unfairly aggravated by limited markets, and marketing costs.

103. One small cannery in the Cayo district continues to operate and market locally a variety of products, including peppers, tomatoes, beans and sweet corn, and although the pack has been greatly improved, the selling prices remain unfortunately high.

Minor Fruits.

104. The Mango crop was only a fair one, but Avocado pears were more plentiful than usual, with a good sale for both as also for Pawpaw, and Breadfruit; yet even though the quantities available of these fruits are comparatively limited, little expansion is attempted; "Wild" Berries, Cashew and Genip are all popular in season, and belong to the class of crop which looks after itself and provides nonetheless a valuable addition both to the farmer's slender income, and his wife's stock of wines.

Coffee.

105. Probably because of the high World prices ruling for coffee some interest in the local production of this crop has been reawakened, and a small acreage is being planted. Those farmers who have small quantities in bearing in Toledo and Stann Creek were able to sell their surplus at 50 cents per lb.

Broom Corn.

106. A Growers Association was formed in the Northern Districts with 39 members planting up 50 acres partly through cane and selling locally some 225 dozen brooms. The Department carried out fertilizer trials to determine whether straw strength could be improved, and samples have been sent away for a report.

Other Fibres.

107. *Henequen* continues as a cottage industry crop in the Northern and Toledo districts; enquiries made concerning a simple portable decorticating machine suitable for use by village groups are waiting on the results of trials of a protoype machine in Jamaica and Antigua.

108. Plants of *Agave lecheguilla* introduced by the Department in 1953 from Kew and planted at Louisville have as yet given very poor growth.

109. Small plot *Cotton* trials are in progress at the Central Farm and in the Northern districts.

Ipecacuanha.

110. Plants introduced for the C.D.C. from Kew and planted at Alta Vista in the Stann Creek Valley are reported to be growing well.

LIVESTOCK.

Cattle.

111. With no real dry season apparent, pastures and stock maintained better condition than usual, and there were fewer losses from starvation.

112. Gradually more stock owners are realising the advantages of better grasses, and increased pasture areas are resulting; although management standards are still far from the optimum, progress is being achieved, and supplies of fodder grasses are being obtained from departmental plots and stations.

113. More wire is appearing and fencing standards are improving; yet it is unlikely that any great progress can be achieved until farmers can be assisted and encouraged through some form of subsidy scheme to offset the high capital costs involved. Provision for this has been included in the new Development Plan and it is hoped that a scheme can be prepared early in 1955.

114. There is an equal desire for herd improvement and several of the larger herd owners have introduced better bulls from the U.S.A., whilst the demand for bulls from the Central Farm is growing.

115. The Department has continued to encourage spraying against ticks, particularly in Cayo and Orange Walk where farmers have been impressed by the results and are adopting routine spraying themselves. This has been assisted by departmental assistance in the construction of chutes and corrals. At San Felipe village in Orange Walk, the community erected a chute and corral, and planted fodder grasses; unfortunately the latter was damaged by pigs and will have to be replanted, but in due course the community will be able to receive a stud bull for service in their area.

116. The Livestock Association formed last year has transferred its headquarters to Belize and includes members from most districts; it has continued to supply such articles as sprayers, barbed wire, and castrators at cheap rates to its members and to raise various questions with the Government, including prices and price control; these followed the report of a local Committee which was set up to consider the removal of price controls, of which the Veterinary Officer was a member.

117. No progress can be reported with regard to the formation of a Butchers Association in Belize, nor with improvements in the slaughter houses and marketing and storage conditions, whilst small beasts irrespective of quality are still preferred. Weighbridges are however on order for district slaughter houses.

118. Plans for a fresh milk scheme between the Cayo area and Belize were prepared, but have now been set aside, in favour of Government loan assistance to a private individual, operating under the joint aegis of Government and the Livestock Association.

119. The demand for fresh milk in Belize appears to be increasing, and the same two suppliers continue to retail, and their supplies are being augmented from other producers near Cayo.

120. The control of slaughter of cows and heifers by permit has been continued, a total of 994 head being recorded (31.57% of total slaughter compared to 33.2% in 1953).

121. The average Belize slaughter house carcase weights were 225 lb., almost identical with that recorded last year, with all recorded slaughter house weights rising slightly from 216 to 228 lb. Details, except Orange Walk and Corozal which were not recorded, are set out in Appendix IV. These show very little variation from the returns of previous years.

122. Little serious disease trouble occurred during the year, although an outbreak, suspected to be Vesicular Stomatitis, reappeared in Cayo and Stann Creek districts. Attempts to have this confirmed by the transmission of specimens to the Pirbright Institute were unsuccessful, and its definite cause is still therefore unconfirmed.

123. The only other cattle troubles were some cases of "Texas Fever" in bulls imported from the U.S.A. and a suspected case of Anthrax at Never Delay, but this latter proved negative after laboratory examination.

124. Until he left on resignation, the Veterinary Officer was principally engaged on an animal disease survey to determine effectively for the first time what diseases and parasites do occur here; it is unfortunate that this work has been left incomplete.

125. Testing for T.B. was carried out in Cayo, Stann Creek, and the Northern district herds, and in over 600 head only 4 positive reactors, and three suspects were recorded. Of 52 head in the Central Farm herd tested for Bangs only one positive reactor was found and culled.

126. Eighty-two random faecal samples were tested for parasites with the following results:—

	No.	Nodule worms	*Trichostrongylidae*	Hookworms	*Strongyloides*	*Ascarids*	*Coccidia*	Negative
Cattle	45		13		4	4	7	17
Horses	19				17			2
Mules	2				2			—
Dogs	14			7	1	2		5
Cat	1					1		—
Monkey	1							1
Pigs	4	1			1		2	—

127. Tick collections and counts were taken and submitted for identification; monthly figures being:—

	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Boophilus microplus ..	212	186	208	154	97	54	67	87	1065
Amblyomma-cajennse ..	266	219	204	2 9	104	98	114	162	1406
Miscellaneous	98	75	86	73	49	45	21	20	467

Pigs.

128. The Toledo district continues to produce the larger proportion of the pigs shipped to Belize, and the Indian village group cooperatives play an important part in this trade, although, excepting the San Antonio group, the standards of feeding and maintenance remain low. The poor corn harvest is undoubtedly leading to a reduction in numbers because of lack of feed.

129. Sporadic cases of Swine Fever unfortunately recurred in the Northern Districts; the vaccination compaign was continued for nearly two thousand head, and although overall cooperation is improving, full coverage has not yet been possible.

130. No hogs were therefore allowed out of the quarantine area and the Swine Fever (Infected Places) Order 1953 S.I. No. 44 remained in force. Owners in this area undoubtedly experienced difficulty in marketing their pigs and had, as a result, to accept reduced prices.

Poultry.

131. Poultry troubles were, if anything, less in evidence this year, and only mild outbreaks of fowl cholera, fowl pox and yaws occurred, but with one of fowl cholera widespread in the Cayo area in December; this was quickly brought under control with excellent cooperation from the community, and Health Department staff.

MARKETING AND AGRICULTURAL LOANS.

132. The importance of the Marketing Board's contribution to increasing production by providing a guaranteed market and prices, and offering annual crop loans cannot be over-emphasised. Once again the staff of the Department have assisted with this work through farm loan inspection and crop purchasing in certain areas.

133. Its activities are well illustrated by the following figures for crop purchases and prices since its inception:—

	Corn		*Rice Padi*		*R.K. Beans*	
	Quantity (short tons)	Price 100 lb.	Quantity (short tons)	Price 100 lb.	Quantity (short tons)	Price 100 lb.
1948/49 ..	1,340.24	$2.75	467.64	$4.10	26.37	$13.50
1949/50 ..	25.36	2.75	510.85	4.10	41.58	13.50
1950/51 ..	553.72	2.90	663.47	4.30	38.52	16.00
1951/52 ..	1,570.01	3.00	652.31	4.50	99.89	18.00
1952/53 ..	1,230.41	3.25	423.60	5.50	77.08	18.00
1953/54 ..	1,434.73	3.25	296.15	5.50	352.26	18.00

134. Loans made during the year for each district were:—

	Amount	No. of farmers	Acreage Rice	Corn
Toledo ..	$8,236.16	271	880	141
Cayo	8,943.76	161	48	851
Belize	2,547.63	47	44	18
Orange Walk	2,251.79	58	—	625
Corozal ..	382.50	1	—	—
Stann Creek ..	229.50	6	—	—
Total	$22,591.34	544	972	1,635

135. R.K. Bean seed to the value of $23,296 was imported by the Board for sale to farmers, and rice costing $333,595 for sale on the local market. A small quantity of J.S.Y. corn seed was also obtained from Jamaica for trial by farmers.

136. 810,510 lb. of local padi was milled with an outturn of 58.04% clean rice, 16.14% by-products, and milling loss of 25.82%.

137. Longer term crop and livestock loans continue to be made available to farmers through the Agricultural Credits Fund, which is financed with C.D. and W. assistance, and managed by a committee reporting to the Marketing Board.

138. Approved loan applications have shown a marked increase as follows:— 1951, 5; 1952, 22; 1953, 17; 1954, 40. Of the $300,000 in the fund at 7-1-55, nearly $191,000 was out on loan, and $42,500 subject to final confirmation by the Marketing Board.

139. The importance of such loans being adequately supervised and controlled becomes increasingly vital as their number increases, and it is therefore hoped that the requisite machinery for carrying this out can be strengthened.

140. Whilst many small farmers continue to be hampered by their lack of adequate security, some have still to realise that by accepting loans they themselves accept responsibilities for repayments.

PRODUCER ASSOCIATIONS AND FARMERS CLUBS.

141. In addition to the various cooperative producer associations already in being, a number of new farming groups have started to emerge in different village areas. At present virtually all are still in a chrysalis stage with their objectives and implementation yet to be clearly defined; even so their appearance is a welcome indication of community effort and the will to progress.

142. Both the Citrus Growers and the Cane Growers Associations are beginning to play more valuable parts in their respective industries, the former during the visit of the Fact Finding Mission, and the latter concerning negotiations with the Corozal Sugar Factory.

143. In the Corozal area, in particular, farmers groups are becoming important to progress in pineapple, coconut, rice and broom corn production as well as cane; whilst in the Toledo district, both the Indian pig cooperatives, and a number of rice producer groups are established.

144. It is worthy of note also that districts report an increasing number of holdings being taken up with a corresponding increase in requests for help and assistance from the extension staff.

PART II

WORK OF THE DEPARTMENT OF AGRICULTURE.

Staff.

145. Dr. F. Manolson, Veterinary Officer, resigned and left the service on the 1st December.

146. Mr. G. A. Southwell, Agricultural Officer, was transferred to Grenada on the 21st December.

147. Mr. Harold Young, Mechanic, died on the 20th November.

148. Mr. E. G. Russell, Temporary Assistant Agricultural Officer, is still at the University of British Columbia taking a three year degree course.

149. Mr. S. R. Morrison, Rice Officer, arrived and took up duty on the 2nd April.

150. The Director returned from U.K. leave on the 8th February, and took over from Mr. G. B. Gregory, Senior Agricultural Officer, who had been acting Director.

Overseas Training Courses.

151. Once again the Department is indebted to the West Indies Training Scheme (C.D. and W.) and the Jamaica Agricultural Department for making possible the attachment of Messrs. H. Nelson and C. D. W. Atkins, Farm Demonstrators Grade I, for a period of six months training in Jamaica.

Conferences.

152. Dr. F. Manolson, Veterinary Officer, attended the 1954 Convention Meeting of the British Caribbean Veterinary Association in Trinidad in May.

153. Mr. C. A. S. Hynam, Agricultural Education Officer, represented British Honduras at the Conference on Education and Small Scale Farming held under the auspices of the Caribbean Commission and Unesco in Trinidad in October.

AGRICULTURAL EDUCATION.

154. Until March 8th the Agricultural Education Officer continued to reside in Belize; after that date he took up residence at Central Farm where the Hostel for residential training courses is also situated.

Residential Courses.

155. 12 Farmers, 8 Farm Demonstrators, 1 Prison Officer and 8 Primary School Teachers (a total of 29 trainees) attended Courses at various times during the year: of the 29, 11 were Spanish, 4 Carib, 10 Creole, 3 Mayan and 1 East Indian. Distribution by Districts was Belize 2, Corozal 6, Orange Walk 4, Stann Creek 6, Toledo 4 and Cayo 7.

156. (1) *Course for Farm Demonstrators in post.*

The first of a series of courses for this type of personnel was held from March 15th–May 28th (with a recess from April 15th–May 3rd necessitated by election duties etc.). This course dealt with the actual performance of certain basic agricultural operations necessary on a mixed farm or small holding and the scientific reasons for such practices.

Trainees were also introduced to the principles underlying the successful dissemination of ideas and practices to farmers. All the districts were represented, and included among the trainees was one Prison Officer from the Gracie Rock Prison Farm.

157. (2) *Course for Primary School Teachers.*

A short Vacation Course was held from June 1st–11th. Eight teachers selected by the Education Department from a list of 35 applicants attended.

This course aimed at helping the teacher to realize the importance of Agriculture in the economy of British Honduras and the part he can play in the programme for Agricultural Development.

It is planned that similar vacation Courses (but of 1 month's duration) will be an annual feature in addition to a longer course in Agriculture, as from 1956, for students from the Government Teachers Training College in Belize.

158. (3) *Course for Farmers.*

Pending the approval of other means of selection which are under consideration, most of the candidates were selected in the first instance by the District Agricultural Officers in consultation with the District Commissioners and others. The Agricultural Education Officer interviewed candidates in the Districts and submitted a final list of 12 for the approval of the Director of Agriculture. All those selected were in some measure practising farmers on their own or family holdings. The youngest was 14 and the oldest 29: the average age was 21. Distribution by Districts was Corozal 2, Orange Walk 3, Stann Creek 2, Toledo 2 and Cayo 3. Six were Spanish, 1 Carib, 2 Mayan, 2 Creole and 1 East Indian.

The Course was of 3 months duration (August 31st—December 1st). In addition to general elementary scientific agricultural principles and practices, the more important crops grown in British Honduras were dealt with. The course was designed to provide a foundation on which the District Extension Staff can build.

159. In all of the courses given at least half of the time was spent in outdoor practical work.

160. Profiting from the experiences of other Caribbean countries it is considered better to concentrate on short intensive courses with adequate follow-up in the Districts and opportunities for those who merit it to return for more, than to aim at one long Course under conditions which may be far removed from those obtaining in the environments from which some of the trainees come.

161. In conducting the Courses referred to above, the Agricultural Education Officer was assisted from time to time by other members of the Staff, by the Director of Education and members of his Staff, by the resident extra-mural tutor of the University College of the West Indies and by the Marketing Officer.

The Department is also indebted to the Guest Speakers who gave extra-curricular talks to trainees, mostly in the evenings or out of normal working hours.

162. Apart from the scheduled curricular activities students look after the grounds and buildings whilst on course and are responsible for their own catering with a cook-caretaker's assistance.

163. *District Work.* Between Courses the Agricultural Education Officer spent most of his time following up trainees in the Districts, visiting schools, and collecting information about community needs, group activities and prospective trainees.

164. 29 schools were visited during the year, distributed in the Districts as follows: Corozal 8, Stann Creek 5, Cayo 5, Orange Walk 5, Toledo 4, and Belize 2. In most of the schools visited informal talks were given to the children aimed at stimulating awareness of the things of interest in their own surroundings.

165. In seven of the schools visited, Head Teachers had attended the Vacation Course at Central Farm earlier in the year. In these schools children who volunteered were given opportunities to qualify for admission into Young Farmers Groups by satisfactorily completing a simple gardening project clearly outlined in a pamphlet issued from the Central Farm Hostel.

By the end of the year three schools had made creditable starts—Barranco R.C., Xaibe R.C., and Stann Creek Valley Seventh Day Adventist.

166. From the time of its opening in October 1953 to the end of August 1954 when the last Course of the year commenced, 25 trainees had passed through the Central Farm Hostel

for the first time. All of these were visited during the year, some on more than one occasion, and their activities noted.

The Agricultural Education Officer also made contacts during the year with the "Young Farmers Club" organization in Corozal, which, under the guidance of the Senior Farm Demonstrator, has been doing good work since 1952.

167. Public lectures on "Agricultural Education" were given in Cayo and Belize and one on "The Nature of the Soil: Good and Bad Farming" at Burrell Boom.

EXTENSION WORK.

168. District extension work, as heretofore, consisted of many and varied duties, including land inspections for location ticket title applications, for Marketing Board and Agricultural Credit Fund loans, the purchasing of crops on behalf of the Marketing Board, demonstrations of spraying cattle, of control of Wee Wee ants, of budding and grafting citrus, castrations and caponising, worming and stock hygiene and treatment and the many other multifarious services which the farming community requires.

169. All this work is carried out by staff who are trying to learn and become more efficient, who are ready and anxious to help farmers in matters which are never spectacular and which take time and patience to bear fruit. That their efforts are often criticised and sometimes not appreciated is unfortunate, but for extension work to be successful the farmer should realise that it has to be a joint undertaking, and one in which he has to be himself equally cooperative and understanding. Only by himself adopting proven and better practices can the farmer improve; no extension worker can achieve miracles for him instead.

170. Sixty-two location ticket inspections were carried out during the year, 43 being recommended for approval, 13 for extension, and 6 for cancellation.

171. Extension staff have additionally assisted farmers groups and joined in discussions, have organised local visits to agricultural stations or farms, and encouraged or established grass plots in various areas. Specific crop surveys have also been undertaken.

DISTRICT AGRICULTURAL STATIONS.

172. The three district stations at Stann Creek, Punta Gorda and Orange Walk are at last rehabilitated for plant multiplication purposes and are being stocked up as stud centres.

173. *Stann Creek*: The Agricultural Station enjoyed a very good year. The early part of the year being very moist permitted early planting of all crops and greatly reduced the necessity of watering the young nurseries. The rains seemed to come at just the right times and in the right amounts, and it was not until the end of September that complaint could be made about the weather.

174. Clearing operations were completed with a 12 acre portion being cleared, stumped and ploughed. There are now 70 acres under cultivation. The old citrus orchards were stumped and the ground levelled to permit bush-hogging.

175. Fencing was completed with the removal of some old fences to join up blocks of land for easier access.

176. Renovation of buildings was completed with the remodelling of the stables. This has been improved to give a feed storage room, milk room, milking stalls, loafing pen, two calf pens and five hog pens.

177. *Maize.* 7.48 acres were planted with a yield of 5,574 lb. or 745 lb. per acre. Labour and machinery costs totalled $409 or .07 per lb. Clearing charges were mainly responsible for the high cost.

178. Water-logging caused poor growth and the low yield. Seed was selected and 66 lb. obtained from three-cobs-per-stalk selection and 45 lb. from two-cobs-per-stalk selection.

179. *Red Kidney Beans.* The 1953/54 crop turned out very poorly giving a return of four lb. to one lb. planted. An area of slightly less than one acre gave a total yield of 390 lb.

180. 2.4 acres were planted in early December but the very dry conditions are not promising.

181. *Yams.* Eight varieties were planted with a total acreage of .37 acres. The following results were obtained:

Variety	No. Hills	Yield Hill	Yield Acre	Cost Hill	Cost Per lb.
		lb.	tons		
Negro	349	7.7	8.80	0.44	0.06
White	243	6.5	8.05	0.44	0.06
Yampi (red)	180	1.3	1.50	0.44	0.34
Chinese	25	8.0	9.09	0.44	0.05
Yellow (Body)	25	4.4	5.00	0.44	0.10
Yellow (Head)	31	4.0	4.50	0.44	0.11
St. Vincent	41	10.0	9.40	0.44	0.04
Barbados	42	13.0	10.20	0.44	0.03

182. 810 lb. of yam seed was distributed during the year.

183. Seven varities of Sweet Potato were obtained for planting. A small area was planted to each variety commencing in September. Two sacks of slips were sold for planting purposes.

184. *Cassava.* Four varieties of sweet cassava were obtained locally and planted out. The area totalled 0.65 acres.

185. *Peanuts.* Two crops were planted and reaped. The early crop in May gave a small return, but a subsequent planting in October gave almost nothing. To date peanuts have been very unsuccessful.

186. *Pineapple.* A good crop was obtained from the old mixed planting. About 0.3 acres yielded 3,165 lb. of saleable pine, costing 12 cents per lb. An attempt was made to sort out into varieties and separate plots of Sugar Loaf, Horse Pine and Red Spanish were set out.

187. The Smooth Cayenne and Natal Queen planted in 1953 have not done well. Two of the Natal Queen gave small fruits.

188. *Vegetables.* A small vegetable garden was maintained. Results have not been good due to poor soil. A trailer is required to enable the incorporation of large amounts of sand. Heavy application of cow manure and chemical fertilizers have made great improvements.

189. *Citrus nurseries.* The old citrus nursery was completely cleared of plants during the year. The nursery set out in 1953 of 12,000 plants was completely budded and about 4,000 plants distributed from it. A new nursery of 14,000 seedlings was established in July. In December fresh seed beds under shade were planted with very good germination.

190. During the year just over 28,000 budded plants were distributed. Out of this total 728 were shipped to Punta Gorda, 182 to Belize, 321 to Orange Walk and 5,827 to Corozal. One shipment was made to Crique Sarco and one to Sarteneja.

191. Varieties distributed were as follows:—

Grape fruit	Valencia	Wash. Navel	Parson Brown	Pine-apple	Hamlin	Lue Gim Gong	Tangerine and Mandarin
772	23,987	852	547	397	879	284	319

192. At the end of the year 3,000 budded plants remained ready for early distribution in 1955. Budding of Valencia was just commencing in the new nursery.

193. *Mango and other Nurseries.* During the year 78 mango plants were distributed and 153 other miscellaneous plants. Grafting of the 1953 mango nursery was almost completed and a fresh nursery of about 500 plants had been set out. There were 454 grafted plants remaining in the nursery. Small plots of Akee, Velvet Apple and Hibiscus were set out. Rambutan and Mangosteen failed due to lack of seed.

194. *Citrus Orchard.* A small citrus orchard was set out containing 40 varieties of lime, lemon, tangerine, orange and grapefruit. Most of the varieties were limited to two trees each.

195. *Cacao.* The Cacao plot of four acres was completely bushed during the year and supplied with banana and plantain as temporary shade. Only a small portion has adequate shade now, but the rest is showing good improvement. *Erythrina* were set out as permanent shade and a wind-break of *Excelsa* coffee and *Cassia siamea* set out. Drains were put in near the end of the year and the plot reduced to just over two acres.

196. *Coffee.* The seed obtained from Jamaica germinated well in the nursery. Near the end of the year 300 plants were set out and took very well considering the late season.

197. *Coconut.* The coconut walk was improved considerably. The area was ploughed and interplanted with Pigeon Pea. More drains were put through the area. Several of the worst trees were cut down and dwarf coconut replanted in the vacant spaces. 31 bearing trees averaged a yield of 33 nuts per tree.

198. 300 dwarf coconut plants were distributed to farmers.

199. *Pastures.* 30 acres of temporary pasture were available and eight acres of permanent pasture. In addition a further five acres were ploughed and planted with various grass seed and Kudzu for permanent pasture. The grass seed gave very poor germination but one field has a very nice stand of Kudzu and Para grass.

200. *Livestock.* The cattle kept in very good condition throughout the year. Three cases of Ulcerative Stomatitis occurred, two being teat infections. The six calves born in late 1953 grew very well and were all weaned in June. Three of the cows were milked once a day during this period and 1,529 quart bottles of milk sold.

201. A bull (Jersey) was obtained from Central Farm in March and kept for service. In addition to the seven cows belonging to the station, eight outside cows were brought for service.

202. Three heifers were obtained to increase the breeding herd. It is regretted that one of the best heifers born in 1953 had to be slaughtered.

203. The three remaining oxen were sold for slaughter early in the year. One bull calf was sold for breeding purposes to Mr. D. McDougall of Sittee River.

204. *Equipment.* The mechanical equipment was a real problem during the year. The Allen Mower and Rotary Hoe were both out of order for long periods as spares were unobtainble. The Ferguson tractor also had numerous breakdowns and spare parts were difficult to obtain.

205. *Punta Gorda*: The work of resuscitating the Station was continued during the year. Several trials using imported new strains of rice, yams and sweet potatoes were carried out. New varieties of yams, and budded citrus were distributed to local farmers from the Station.

Trials.

206. (1) *Rice Varieties.*

Variety	Acreage	Yield	Yield per acre
		lb.	lb.
Barley	1/25	31	775
B.H. Creole	1/25	44	1,100
B.G. 79	1/25	23	575
Blue Bonnet	1/25	57	1,425
Century Patna ..	1/25	8	200
Djalen	1/25	—	—
Fortuna	1/25	—	—
Magnolia	1/25	15	375
Sureno Precoz ..	1/25	5	125
Texas Patna	1/25	3	75
Zenith	1/25	3	75
D 110	1/25	23	575
D 114	1/25	4	100
D 54—42	1/25	23	575
D 95—42	1/25	2.5	62.5

Bird damage was fairly heavy on most varieties especially on Djalen, which was completely destroyed.

207. (2) *Yams*

Variety	Yield Per Acre lb.
White Yam	18,373
Carib Yam	30,622
Chinese Yam	19,776
Bottle Neck Lisbon	15,416
Oriental	6,968
Horn	7,717

208. (3) *Sweet Potatoes.*

Variety	Yield Per Acre lb.
Black Rock	1,021
Red Nut	2,382
B 44	2,382
B 5	2,978
Vernon White	7,260
John Directly	340
Tulcey 5-Finger	11,298
Thompson Special	5,853

209. (4) *R.K. Bean Fertiliser Trial.*

	Type	Rate lb. per acre
Fertiliser applied ..	Sulphate of Ammonia ..	90
	Triple Phosphate	90
	Muriate of Potash	45

Rate of NPK Complete Fertiliser 2 cwts of 2:3:1 Mixture per acre.

Treatment	Yield in lb. acre
Control	405
N.P.K.	810
P.K.	855
N.P.	630
P.	225

210. *Orange Walk*: The vegetable garden was kept going throughout the year. It was found that cabbage, radish, lettuce and egg plant could be grown all the year round, whilst such things as cauliflower, onion, tomatoes, beets and carrots did well only during the cooler months.

211. Two simple experiments are being run. One is to show the effect that mulch may have on size and quality of the product. The other is an experiment to try to determine the water requirements of cabbage and cauliflower.

212. On March 26th a Field Day was held at the Agricultural Station in Orange Walk. Eighty-five persons attended this demonstration. The Director welcomed the visitors and they were divided into three groups for a tour of the station. During the tour the groups saw the vegetable garden, cane variety trial, tobacco trial, a Caldwell Bush Hog at work on a grass field, and finally the livestock and their pens. A demonstration of spraying was also given, using one of the new sprayers imported by the Livestock Association.

213. *Livestock at the Agricultural Station.* On the 17th March we received a grade Red Poll Bull "Central Chieftain" and a Buck Goat "Prisoner" from the Central Farm. On the 24th March the Department purchased three cows. These animals were in calf.

The bull has served a total of seven cows.

The buck did not serve any females, and died of pneumonia on the 19th October.

Three calves, a heifer and two bulls were born 1st June, 17th June and 15th September respectively.

The three cows produced a total of 2,004 lb. 12 oz. of milk from June to December 31st, 1954.

Baking Pot Central Farm.

214. *Buildings, etc.* A new clerical staff house was erected during the year, and the electric plant installed and switched on for a six hour nightly service on the 15th May.

The installation of the water supply, pump, and reservoir was also begun.

215. On the 29th August the headquarters office was broken into and the safe stolen. Measures have subsequently been taken to prevent any recurrence being possible.

216. *Rainfall*: Records from the Station's inception are as follows:—

	1949	1950	1951	1952	1953	1954
January	2.90	6.77	1.57	2.45	0.19	2.41
February	0.44	2.01	2.74	0.63	1.01	0.02
March	0.96	1.49	1.11	0.20	0.40	2.88
April	0.13	0.47	2.25	2.73	0.02	2.38
May..	0.00	0.99	2.33	4.28	8.27	7.86
June..	3.32	10.06	5.51	9.49	2.56	15.14
July	1.21	4.98	10.60	9.48	4.95	7.05
August	2.35	5.78	3.25	5.26	4.82	7.34
September	4.21	4.80	6.25	5.81	8.09	8.97
October	2.03	8.92	8.78	13.23	5.39	7.39
November	1.96	2.30	5.57	6.74	3.72	2.99
December	5.58	1.60	6.88	2.71	3.05	3.71
Total	25.09	50.17	56.84	63.01	42.47	68.14

217. *Crops*: *Maize*. An area of 47¼ acres was planted by machine and hand after the land had been well harrowed and rotovated, but the heavy rain prevented ridging being carried out. The crop was clean and the mechanical picker worked well for 44¼ acres harvested in 59 hours. The yield was much better than in 1953, giving 326 cargoes or 665 lb. seed per acre, but resulted in a loss of $337.

218. *R.K. Beans*: The 1953/54 crop averaged 1,189 lb. from 64 acres; the 1954/55 crop planted in November does not promise well, it is thought because of an adverse build up of bacteria in the soil, which will require the land to be rested from beans for some years.

219. *Yams*: All staked gave the following yields:—

Carib variety	10 tons per acre
Yellow variety	5½ tons per acre
White variety	11 tons per acre
Chinese variety	8 tons per acre

220. *Pineapples*: From 15th March to 28th January 1955 yields totalled:—

Sugar Loaf	1,057 head of average weight	3.04 lb.
Smooth Cayenne ..	21 head of average weight	5.28 lb.
Natal Queen	12 head of average weight	1.25 lb.
Horsepine	2 head of average weight	1.25 lb.

221. *Vegetable Garden*: The area under cultivation is being rotated to include a resting fallow, and full cultivation and yield data are being collected.

222. *Citrus Nursery and Economic Orchard*: 3,672 assorted citrus were sold to farmers, and 500 left for subsequent issue; the economic orchard is being expanded and grafted mangoes, avocado, and oil palm variety selections added.

223. *Shallots*: From half an acre planted as a field trial only 395 lb. were harvested; the results were disappointing and indicate that well drained land must be used and time of planting trials be carried out.

224. *Livestock*: Buildings—the dairy, calfpens, bull stalls and isolation pen are now complete and in use, though the first would be the better for enlargement and the provision of a permanent roof as opposed to thatch. Work has also begun on the range of new pig pens, and for the completion of the cattle spray race and weighbridge.

225. *Pastures and fencing*: The pasture area continues to be improved by the clearing, windrowing and burning of remaining larger trees; although the Guinea Grass area has deteriorated from over stocking and cutting too low. This and the rest of the area to the west is undergoing rehabilitation and will be gradually sown to improved grasses. The area below the bull pens and to the west of the Listowel road is being utilised for variety trials after being cropped with corn and beans; sweet grass (*Ixophorus unisetus*), Pangola grass (*Digitaria decumbens*) and Para grass (*Panicum barbinode sp.*) have to date been planted.

226. The established areas of savannah and Bermuda grass have been "bush hogged" and grazed according to a planned rotation. It will nevertheless be some time before adequate grazing is available, and the whole area be permanently established.

227. *Cattle*: The stock was drastically culled in 1954, so that the better stock remaining could form the basis of the beef and dairy foundation herds to be run as separate units, now that better subdivision of pasture allows. An auction was held on 11th August and 52 head sold for $4,453.00.

228. At the end of the year the herds comprised:—

	Dairy Herd	Beef Herd
Bulls	1	1
Cows	13	19
Heifers	12	—
Bull calves	6	1
Heifer calves	10	—
Totals	42	21

229. Fourteen bull calves and 11 heifer calves were born during the year, and regular weighings from birth were started in July. The average birth weights for the five born subsequent to this date were 58 and 55 lb. for male and female calves respectively, and the average number of weeks to 200 lb. from these calves was 13.

This compares much more favourably than the growth performance of the 1953 crop and illustrates the need for doing the calves as well as possible in their early life.

230. Dairy cows have been fed crushed corn and molasses; a suitable cheap local protein supplement is as yet difficult to provide. Calves get whole milk and calf startena to 200 lb. weight. Milk yields are given in Appendix VIII; they improved considerably once the cows could be moved into the dairy and handled quietly.

231. Difficulties are being experienced getting cows again in calf without a long interval, and the reasons for this will have to be carefully examined.

232. The cattle kept reasonably healthy throughout the year apart from suspect Vesicular Stomatitis and a few cases of recurrent Mastitis.

233. Four young bulls have been sold to farmers, three in the Cayo and one in Belize district.

Scatter Plot Trials and Experimental Work.

234. The season was one of many disappointments in so far as the storms which struck Corozal and Stann Creek, and the accompanying widespread winds did a great deal of damage to established trials. All plantain fertilizer trials were severely affected to the extent that several were abandoned, and corn and rice fertilizer and varietal trials were flooded. The unusually wet growing season for the corn crop rendered many trial plot results of dubious value and made comparisons of introduced hybrids with local corn a difficult process on account of the widespread lodging of the latter.

235. The year saw Central Farm gradually become the centre for those trials in which the soil type is not an important factor and the proving of new crops and varieties has become an integral part of the activities of the Station.

236. Additions to the office of the Experimentalist include 57 reference texts and several dozen technical reprints, a pH meter, facilities for seed-testing, a drying oven and a calculating machine. A "Clifford" rotary cultivator with spraying and mowing attachments was purchased during the year. This equipment can be carried in the Landrover trailer and has stood up well to the conditions experienced in preparing District trial plots. A start was made in collating miscellaneous herbarium material on hand and a further 200 forage and other specimens were collected, mounted and identified with the assistance of the Systematic Botanist at Zamorano, Republic of Honduras.

237. The training of local workers to the stage where they can lay down and record simple field trials has been an important part of the year's work and co-operation with farmers in livestock and pasture trials has already yielded valuable data. A fair amount of time has been devoted to lectures and discussions at Hostel courses, and to the preparation of Information Sheets for distribution to staff and farmers.

238. The supervisory staff needed for an extensive scatter of fertiliser and variety trials has been insufficient and the milpa system of farming with its heterogeneous crop sites has been a great obstacle to such an approach: the extreme variability of trial results in 1953 under such conditions has led to the adoption of a system of fewer, more comprehensive trials on land where mechanical cultivation is practiced. The more precise information gained thereby with regard to crop performance and soil nutrient status appears to have justified this departure from the original "scatterplot" scheme. The results obtained are applicable in most cases to adjacent milpa lands which are, by their very nature, singularly difficult sites for field trials.

239. A Summary of Trials in Progress or Completed as at 31st December, 1954.

Crop	Type of Trial	Number
Corn	Fertilizer	6
	Varietal	5
	Miscellaneous	3
Sugar cane	Fertilizer	49
	Varietal	2
Peanuts	Fertilizer X Varietal	1
Coconut	Fertilizer	8
Pineapple	Fertilizer and Varietal	5
Broomcorn	Fertilizer	2
Plantain	Fertilizer	4
Rice	Fertilizer X Varietal	2
Citrus	Fertilizer, Trace Element	3
Cotton	Varietal, Insecticidal	4
R.K. Beans	Miscellaneous	9
Pasture	Fertilizer, Dry Matter Production	4
Poultry	Feeding Trial	1
Destroyed by Windstorm and Floods		7
	Total Yielding Data	101

240. The salient points arising out of the year's experimental work are given herewith, the numbers referring to the supporting figures and analyses contained in Appendix IX.

241. *Maize.* Fertilizer trials were carried out in the Northern and Western Districts. There was in most cases a response to phosphate but insufficient to make its application an economic proposition: the exception was a trial at Baking Pot where late-planted corn gave a worth-while increase in response to 112 lb. of triple phosphate (1*d*).

242. The dusting of seed corn against soil fungi and ants proved to be highly successful (1*a*); a spacing trial indicated a slight trend only in favour of closer planting than the normal milpa practice (1*b*) and a weedicide experiment indicated that ester 2,4-D applied at 1 pint per acre when the crop is at the jointing stage can effectively reduce weed competition without impairing the crop yield (1*c*). A time of planting trial gave heaviest yields with the earliest planting date, May 1st; and progressively less through to the last sowing date, June 1st (1*e*).

243. Eight hybrid corns were introduced from the Southern U.S.A. and the performance of three others grown by a private farmer was recorded. Of these, Dixie 18, JSY and Cornelli 54 were the only corns with sufficient tip cover to withstand weevil and parrot damage in the field but all introductions proved superior to the local corn in their resistance to lodging.

244. A field survey of local corn crops was carried out in co-operation with District staff in the Western, Stann Creek and Northern Districts to obtain data upon which to base selection work. It appears from the mass of data obtained that Central Farm yellow flint corn is significantly better with regard to number of cobs per stalk, indicating that the selection exercised since 1951 has been effective. A further 568 cobs were set aside from the Central Farm crop for continuing this work.

245. *Groundnuts.* An area of 106 plots, each 1/71.3 acre, was laid down at Central Farm to evaluate Nigerian varieties not previously grown, and to study the effects of fertilizers, lime, seed dusts and chemical weed control. (Appendix IX, 3). The variety Samaru 38 proved to be the heaviest cropper on the red clays but as a yellow-skinned nut it is less acceptable on the local market than Tennessee Red or Valencia which were included in the four heaviest yielders. The combination of a complete fertilizer and dusted seed gave maximum yields and the use of "Premerge" for weed control was promising; liming on these soils had a detrimental effect. Growth data for all 13 varieties grown is given in the Appendix. As a result of the Department's

experience with this crop since 1952, it is recommended that Tennessee Red be grown as the variety best suited to the Western District.

246. *Rice.* Trials were established at Patchakan and the Carib Reserve at Stann Creek, using five varieties of rice and NPK fertilizers. The Stann Creek trial was damaged by the floods of September and bird damage was severe. Results are shown in Appendix IX, 4. There was no difference between varieties at Stann Creek but at Patchakan Zenith and Bluebonnet significantly outyielded the others. There was no clearcut response to fertilizer at Patchakan. The variety Zenith proved particularly liable to stem rot with resultant lodging at harvest.

The variation with respect to the rate of maturity was as follows:—

	days
B.H. Creole, Zenith, Century Patna	127
Bluebonnet	150
Patna	156

247. *Sugar.* The Department, in co-operation with the Sugar Growers' Association and the Pembroke Hall Factory, laid down a scatter of 50 plots to determine the effect on cane yields of phosphate and nitrogen on all the main sugar-producing soils. Results are not yet to hand.

248. In the laying down of a variety trial at Caledonia, the difference in germinating ability of the canes was a striking feature (Appendix IX, 2*a*). It is clear that B.H. growers have become accustomed to the vigourous POJ 2878 variety which does well without treatment of the planting material; if the newer varieties are to be bulked in the next few seasons then steps should be taken to increase, by soaking, the germinating capacity of such canes as B 37161.

249. A small variety and manurial demonstration plot at the Toledo Agricultural Station (Appendix IX, 2*b*) indicated that the Barbados varieties B 45152, B 41227 and B 3337 were above average for the ten varieties grown in yield of cane and sucrose content under the high rainfall conditions obtaining at the Station. The incidence of attack by cane moth borer (*Diatraea saccharalis*) was lower than that recorded for the Northern District in 1953. The brix readings compared favourably with those from the North but this needs confirmation by actual juice tests. There was no response to either a complete fertilizer application or to farmyard manure.

250. *Pineapples.* The Department continued to send planting material of the variety Smooth Cayenne to the Northern growers from uncultivated stands in the Sarstoon River region. A fertilizer trial on Xaibe bouldery clay in the Corozal District was completed: there was no response to any fertilizer treatment in terms of plant vigour, number of fruit set or weight of fruit. There was some indication that Nitrogen-treated plants had earlier-maturing fruit. Details of the results are shown in Appendix IX, 5.

251. *Broomcorn.* A fertilizer trial at Consejo was a complete failure and no single fertilizer or combination of nutrients was able to elicit a response on this difficult, gypsum-rich soil. Another series of plots at San Maximo gave an increased yield of both straw and seed with 100 lb. of triple phosphate per acre and samples of the manufactured brooms from each treatment were sent to the U.K. for a trade report on the straw quality. The figures for this trial are given in Appendix IX, 6.

252. *Pasture.* Investigations in this field have been restricted to the introduction of new species and their performance under District conditions, and to the bulking-up of the indigenous *Ixophorus unisetus* preparatory to grazing trials. Dallis grass (*Paspalum dilatatum*) shows promise as a close bite feed for drier areas in the West and subterranean clover has survived severe drought conditions on the limestone ridges above Benque Viejo. Blue panic (*P. antidotale*) is another drought-resistant clump grass but in general the introductions have proved no more productive or palatable than Guinea grass and 1955 work will be aimed at investigating means of establishment and management of Guinea grass. Two trials involving monthly clipping and sampling of unimproved savannahs are in progress but will not have completed a 12-month cycle till May, 1955. The results to date indicate that there is some response to dressings of Sulphate of Ammonia and none to either Phosphate or Potash.

Feeding Trials.

253. (*a*) *Pigs.* A trial is in progress at Central Farm to ascertain the rate of growth and feed economy of local pigs and to cost out the use of imported livermeal as a supplement to a corn-roots-greens ration.

254. (*b*) *Poultry.* In co-operation with an Indian farmer at Yo Creek, the Department has established a 3-house semi-intensive unit to demonstrate better husbandry and to facilitate the study of local bird production. The effect of replacing 100 lb. of yellow corn with either 65 lb. of seconds peanuts or 14 lb. of livermeal is still under investigation: figures have been compiled since the start of the moult in August but for the laying months of December to March, they are as follows:—

	Corn only	Corn plus Peanuts	Corn plus Livermeal
No. of birds	30	30	30
No. of eggs	704	873	1,028
% lay	20.5	25.4	31.5
Egg size (oz/doz.)	21.9	22.6	23.1
Feed cost (121 days)	$15.24	$20.81	$13.98
Feed cost per egg	2.16¢	2.38¢	1.35¢

255. *Citrus.* Three long-term trials have been laid down in the Stann Creek valley. Two of these are NPK-type with young trees and the other a micro-nutrient trial with other trees. The first harvest from two of these, one year after the first applications, will take place this year.

256. *Cotton.* With the guidance of the staff of the Empire Cotton Growing Corporation's Station at Antigua, a series of plots were established in the Northern and Western Districts with medium staple varieties. The crops were late planted and germination was generally poor. Observations to date indicate that boll weevil is prevalent North of the New River but absent elsewhere. Aphids were troublesome throughout and stainers were serious enough at Central Farm to warrant two applications of BHC dust. Harvest data is not yet available.

257. *Red Kidney Beans.* A fertilizer trial at Central Farm indicated that response to Nitrogen was good, and this together with the fact that nodulation was poor throughout the Cayo District suggests that inoculation of seed may be worthwhile, despite the fact that the crop has been widely grown for several years. There was no response to either Phosphate or Potash and a depressing effect due to lime on these red clay soils (Appendix IX, 7*a*). The use of a seed dust gave no significant increase in crop yield but the small gain recorded would make dusting economically worthwhile. (Appendix IX, 7*b*). A spacing trial gave inconclusive results but indicated that seed quantities well below the locally-accepted 50-70 lb. per acre are capable of good crop yields (7*c*). A field survey of the disease factor in seed from three different sources failed to substantiate the claim that fresh U.S.-grown seed must be used each year. The trial will be repeated in 1955. Spraying with a copper compound against powdery mildew and bean rust increased the crop yield by 64% (7*d*).

258. *Miscellaneous.* A collection of local food beans was started and samples sent to the National Institute of Botany for identification. Preliminary tests with Lindane-quality BHC for storing corn and beans gave excellent results and quantitative estimates of loss due to storage insects are continuing. An effort to kill Indian shot (*Canna indica*) in volunteer grassland with chemicals gave unsatisfactory results (Appendix IX, 8); only MCPA reduced the stand of weed without damaging the grass.

Tobacco Trials.

259. The Tobacco Officer who arrived in December 1953 having made an assessment of possible areas for tobacco production and drawn up estimates of proposed trials, carried out some preliminary out of season cultivation at the Central Farm primarily in order to multiply seed and also to observe soil variation and disease incidence on varieties he had brought with him.

260. These initial small scale trials enabled him to discard some varieties and also obtain a preliminary report on some cigar leaf, although facilities for proper curing were as yet lacking.

261. From the latter, variety No. 312 was reported as giving a good wrapper, having a good leaf surface, and being suitably thin. However it burnt quickly, a defect which may be rectified when proper fermentation is possible. The report recommends that larger samples would be worth submission, when proper fermentation can be carried out.

262. After a considerable delay, the tobacco officer's plans for a first year trial of cigarette leaf production in the Orange Walk area were approved in time for six acres of land to be prepared and seed sown at the end of the rains.

263. Land has been rented on the border of the Palmar Indian reserve, where labour is available, and a fine sandy soil occurs. Two permanent flue curing barns are being erected, and the crop is being tansplanted from seedbeds.

264. If good quality leaf can be produced economically, it could ultimately provide a lucrative cash crop to the farmers in this area, who are at present dependent largely on corn. The Belize cigarette factory now imports the bulk of its requirements from overseas, and utilises but a small quantity of inferior stem cut, air cured, locally grown tobacco for which only a low price can be offered.

The results of the current trials are therefore of some importance to the future economy of this area.

Rice Pilot Scheme.

265. The Rice Officer arrived in the Colony in April. Visits were first made to all parts where rice was being produced or might be suitable for production. Two locations, "The Dump" in the Toledo district and an area near Mussel Creek in the Belize District were particularly studied because of their recommendations as areas for increased production by rice specialists on previous visits.

266. An area of approximately 100 acres of high bush in "The Dump" on the south side of the San Antonio road was selected to be cleared mechanically and farmed in 1955 by a group of farmers in that area. The area will then be surveyed for the possibility of water control and some degree of mechanized farming by this group in subsequent years.

267. Because of climate, soils represented, transport and other reasons the area at Mussel Creek was chosen as the site for a fully mechanized pilot scheme and as the centre for mechanisation experiments, rice cultural investigations and pure seed selection and increase.

268. A topographical survey was carried out so that a reasonably accurate map of the area showing contour lines at one foot intervals could be made. From this survey an area of 600 acres suitable for mechanized and flooded rice production was selected. An irrigation and drainage system was designed which included the provision of a 100 acre reservoir which would allow irrigation of the fields by gravity, and a pump and canal system which would allow irrigation of the lower-lying fields from a lagoon in Mussel Creek.

269. Tenders for equipment were obtained and a scheme including detailed estimates was prepared covering this work and that at "The Dump". The scheme was approved by the British Honduras Government and by the Colonial Office. A grant from the $3 million special allocation of Colonial Development and Welfare funds for rice investigations was made available in October.

270. The equipment was ordered and is expected to begin arriving early in 1955. The services of bulldozers from the Land Clearing Unit of the Department were obtained late in the year and land clearing and earth moving work is expected to be well underway in early 1955. Although the acreage at Mussel Creek in 1955 will depend upon the availability of equipment and progress of the land clearing it is expected that 150 to 200 acres will be planted during the year.

271. In addition to this work, the Rice Officer in cooperation with Agricultural Officer, Toledo District, rogued 17 acres of B.H. Creole rice to provide as pure seed as possible for growers, for planting in 1955. Similar work was planned for B.G. 79, but was not carried out because the fields planted to this variety contained such a high percentage of other varieties that the rogueing would have been very expensive. Many panicles of both varieties were obtained for selection and seed increase so as to provide a pure line, high yielding seed supply in a few years. Also 40 varieties were grown in a small plot under flooded conditions at Baking Pot for observational purposes.

Land Clearing.

272. Work was hampered but not stopped by the heavy rains, particularly in the latter half of the year when movement of any mechanical equipment became difficult. One D8 was confined to working on the northern bank of the Belize River, and its supply became a somewhat tedious business.

273. Experience during the year also showed that effective supervision became more difficult the wider the unit became scattered and henceforward it is hoped to keep it concentrated into at the most two subunits whenever possible.

274. No further trials of methods have been undertaken as the cost of obtaining the extra equipment and chains required is beyond the limits of the funds available. Comparison with reports of work elsewhere indicate that our troubles are common, in regard to the slowness of work, shortage and nonavailability of spares, little after-sales service and advice, and costly breakdowns because of the rough terrain.

275. Costs charged to date on a tractor hour basis have averaged some $20.00 per acre, which is equivalent to a 50% subsidy, as all overheads and transport costs have not been included.

276. Work carried out in 1954 for private individuals totalled:—

Bushed and Windrowed .. .. 474½ acres;
Heavy harrowed .. .. 496½ acres;
Light harrowed .. .. 439 acres; divided into 1 area of 200 acres, 3 between 50 and 100 acres, 10 between 10 and 50 and 9 under 10 acres.

A further 270 acres was under preparation at the end of the year, as well as various works completed at the Central Farm, and in progress for the Rice Scheme.

277. Additionally to the Land Clearing Unit's work, departmental tractors undertook a limited amount of ploughing, harrowing and bush-hog work for private farmers on a cost payment basis in all districts.

LAND USE SURVEY.

278. The three-man survey team completed its two year on the ground survey in June, and moved to the Imperial College in Trinidad to write up its report, which became available in draft form by the end of the year. This is now being printed with maps and appendices.

279. Emphasis is given to the suitability of the agricultural soils for grass and cattle raising, in particular, and the report will serve as a most valuable basis for future development planning.

PESTS AND DISEASES.

280. *Pests.* Small bands of Locusts, *Schistocerca paranensis*, were again reported from the Guinea Grass Road area in Orange Walk district and at Calcutta in Corozal on May 22nd. No damage to crops ensued and by the end of June all had disappeared.

281. Stann Creek reported some damage to foliage of young citrus by cockchafers early in the year.

282. Wee Wee Ants, *Atta cephalotes*, continue to be a major pest everywhere, but are controllable by Synklor or Aldrex properly applied.

283. Mexican fruit fly, *Anastrepha ludens*, caused more trouble than usual to the fresh grapefruit and section crop; this was probably due to the wetter conditions and lack of orchard sanitation.

284. The Gru-gru, Coconut beetle, *Rhyncophorus palmarum*, also continues to damage coconut plantations and few farmers help to control this pest by trapping and destruction of dying trees.

285. During the visit of Mr. D. W. Hall, Colonial Liaison Officer Pest Infestation Control Laboratory, in May, the high incidence of damage by maize and bean pests in field and corn cribs was observed. Mr. Hall collected numerous samples of weevils and bruchids and made recommendations for storage trials using Lindane dust as a preventative. His report is still awaited.

286. Discoloration of Red Kidney bean leaves on emergence from the seed coat observed in Cayo was attributed by American authorities to a bean mite; damage did not result and affected plants recovered.

287. Froghopper, *Aeneolamia postica jugata* (Fowler) was responsible for damage to sugar cane in the Pembroke Hall area in May-July. This pest is prevalent in cane and rice areas of the Toledo district also.

Diseases.

288. (*a*) *Crops*: *Red Ring* disease of Coconuts continues to occur sporadically particularly in the swampier areas.

289. Gummosis and allied dieback troubles occur occasionally in Stann Creek citrus particularly where drainage is poorest. *Pink disease* was observed in one orchard.

290. *Anthracnose and rust* on Red Kidney beans appeared again and occasioned one farmer to dust his crop with advantage; otherwise only careful sanitation and resting of the land from beans can help control.

291. (*b*) *Livestock*: Outbreaks of suspected *Vesicular Stomatitis* were reported from Cayo and Stann Creek districts, but a suspected case of Anthrax was proved to be false. Four cases of Texas fever occurred in imported bulls on one estate in Cayo, and some isolated cases of Mastitis also in Cayo and Stann Creek.

292. *Swine Fever* continues to "grumble" in the Northern districts, and recurred in several villages in unvaccinated hogs. Little can be done to eradicate this, until one hundred per cent inoculation is possible and full cooperation is given by owners; at the present with the stock on free range, and suspicion of inoculations, it will continue to recur, although cooperation is improving.

293. Poultry troubles were less serious than usual, though *Fowl Typhoid*, *Fowl Cholera* and one outbreak of *Pasteurella* caused some losses.

294. *Various*. (*c*) *Ground Moles* do considerable damage to crops in Stann Creek and Cayo districts, and are most effectively trapped. "Tigers" take some toll of cattle in all areas.

LEGISLATION.

295. The following Ordinances and Statutory Instruments were enacted in 1954 in relation to agricultural matters:—

Ordinance No. 1 of 1954.	To establish funds for the benefit of the Sugar Industry of the Colony and to provide for the administration of such funds.
S.I. No. 4 of 1954.	The Sugar (Special Funds) Regulations 1954.
S.I. No. 40 of 1954.	The Pineapples (Importation from Mexico) Regulations 1954.
Gazette Notice No. 618.	Appointment of Inspectors of Stock in Gazette of 7.8.54.

296. The importation of pork products continued to be controlled under permit.

VISITORS.

297. A large number of visitors were welcomed to Central Farm and District Agricultural stations, including: Mr. J. V. Lochrie, O.B.E., E.C.G.C., Antigua; Mr. Philip Rogers, C.M.G., Colonial Office, in January; Mr. Piper, Colonial Office, in February; Mr. L. J. C. Evans, C.D.C.; Dr. C. Y. Shephard, Caribbean Commission; Mr. I. B. Johnson, F.O.A., and Miss Elsa Haglund, F.A.O., in March; Messrs. E. R. Rivera, Banco de Mexico and Ing. Bernardo Castillejos, in April; Mr. David Hall, Pest Control Laboratory; the Delegates to the Caribbean Commission Conference and Sir Stephen Luke, Comptroller C.D. and W. in May; Dr. Art. Schroeder of the University of California and Mr. David L. Gordon, International Bank in June; Mr. Shenfield in July; Mr. Norman Craig, Asst. Agric. Adviser C.D. and W.; Mr. Cabrera, Caribbean Commission, in September; Mr. Oliver Woods, *Times* Corresponent; Dr. Kirby of the C.P.L.; Mr. L. Lord, O.B.E., Asst. Agric. Adviser Colonial Office, in October; Sir John Worlledge, Director General of Colonial Audit, and Mr. Havard DuClos, Caribbean Commission, in November; Mr. Griffiths, U.C.W.I., and the Members of the Citrus Mission in December.

298. His Excellency the Governor, Members of the Legislative Assembly and heads of Departments, as well as numerous private individuals and commercial representatives have also visited during the year.

ACKNOWLEDGEMENTS.

299. It would be unfair to conclude any report of this year's work, without paying tribute to the valuable contribution provided by all members of the staff, whose efforts have combined to make possible the information and results herein expressed.

J. W. D. GOODBAN,

Director of Agriculture.

APPENDIX I.

SUMMARY OF RAINFALL FOR 1954

BRITISH HONDURAS

Table 1.

District and Station	Month												Total 1954	Total 1953	Ten Years Av.
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.			
COROZAL															
Corozal Town	1.76	.39	.95	1.43	6.60	7.05	9.25	7.64	11.06	14.99	1.85	1.91	64.88	38.74	57.99
Corozal Agstat	3.46	.20	.10	.95	9.85	12.74	13.57	7.10	11.89	13.18	0.78	1.82	75.64	44.94	51.46
Louisville	1.73	.12	1.67	1.61	7.54	12.29	7.88	7.18	11.61	6.67	.57	2.14	61.01	48.65	52.74
Pembroke Hall	1.99	.14	3.18	2.06	10.82	10.66	6.56	5.86	13.76	8.90	.36	1.39	65.68	42.21	
ORANGE WALK															
Orange Walk Town	4.21	.42	2.28	2.28	6.22	26.29	9.88	6.29	19.05	6.01	1.04	1.07	85.04	60.22	59.41
Gallon Jug	4.14	.59	1.31	3.75	8.74	15.63	7.99	11.68	12.25	5.26	2.42	3.04	76.80	50.16	3. 43*a*
San Estevan	3.67	.07	2.43	4.82	10.82	16.14	7.66	10.19	18.72	23.38	5.44	5.09	108.43	76.18	69.77*b*
August Pine Ridge	2.86	.30	3.08	2.38	7.68	25.17	7.92	6.44	11.36	10.34	1.89	2.78	82.20	43.02	
BELIZE															
San Pedro	.50	.06	.59	.78	6.09	8.68	4.29	3.17	4.26	14.31	4.64	2.62	49.99	34.06	
Half Moon Cay	6.57	2.24	2.32	2.79	2.45	7.97	4.31	4.01	6.75	6.24	4.36	3.76	53.77	45.95	
Maskalls	4.81	.27	2.47	3.27	11.42	16.50	6.55	8.46	8.16	15.67	.94	2.84	81.36	47.47	
Luckystrike	2.38	.61	2.32	3.57	11.89	16.50	8.38	9.34	15.04	7.59	0.00	5.07	82.69	—	
Salt Creek	3.67	.40	.95	2.48	5.70	14.01	5.20	7.57	12.50	6.99	1.88	3.19	64.54	51.75	
Stanley Field	3.35	1.23	3.13	2.77	4.37	12.28	6.61	12.64	12.66	9.33	3.71	4.00	76.08	53.85	
Belize	3.42	1.68	2.23	2.26	5.45	11.05	5.39	9.85	11.73	11.07	2.19	6.48	72.80	65.08	62.59
Gracie Rock	3.40	.97	5.01	2.66	3.55	16.68	6.91	13.92	10.29	8.98	4.14	4.29	80.80	73.08	
Glenville	4.40	1.11	4.67	4.32	4.40	17.18	19.75	9.11	7.34	6.38	3.42	2.99	85.07	77.27	
CAYO															
Benque Viejo	2.37	0.00	1.86	2.78	5.90	4.00	5.63	7.20	9.40	6.20	3.34	4.39	53.07	47.42	
Cayo Town	3.43	.05	2.50	3.70	7.54	12.18	5.87	4.32	5.99	3.88	.99	4.50	54.95	36.95	51.46
Listowel	3.68	.34	2.50	3.54	8.65	17.33	7.24	5.62	7.73	6.56	2.95	3.51	69.65	40.67	
Central Farm	2.41	.02	2.88	2.38	7.86	15.14	7.05	7.34	8.97	7.39	2.99	3.71	68.14	42.47	47.53*c*
Barton Ramie	3.12	.56	2.97	4.01	5.65	15.86	7.91	6.20	6.39	4.61	3.50	3.57	64.35	47.14	
Augustine	2.29	.79	2.05	5.48	14.88	6.06	3.11	13.52	12.69	8.21	5.26	4.15	78.49	45.95	51.62*c*
Roaring River	4.22	.92	3.11	3.57	3.95	13.26	15.51	9.01	12.38	9.19	5.12	6.26	86.50		
Sibun Camp	4.62	.88	4.02	Recording closed.										90.25	
Norland	2.96	.28	3.08	3.20	9.29	15.95	8.49	7.39	11.06	6.65	3.14	3.89	75.38	47.23	
STANN CREEK															
Stann Creek Town	5.27	2.42	2.45	3.25	3.42	8.69	6.22	9.67	5.49	4.50	5.06	3.09	59.53	56.36	
Melinda Farm	11.03	1.50	1.63	4.36	4.39	13.56	7.45	18.55	14.42	10.79	6.05	3.58	97.31	77.79	
Stann Creek Agstat	9.96	2.38	1.89	5.36	5.09	12.72	6.63	14.05	14.03	10.20	6.09	3.67	92.07	74.30	78.14
Pomona	5.34	2.60	1.71	7.07	6.42	21.45	9.02	11.16	15.57	7.53	7.60	4.78	100.25	74.14	
False Creek	7.10	2.19	3.59	7.11	5.16	24.66	12.61	13.43	5.43	6.57	11.03	3.94	102.82	84.81	
Cow Creek	6.98	2.06	3.84	7.42	7.20	30.14	14.71	14.64	15.22	12.20	8.60	4.18	127.19	81.06	
New Farm	7.53	2.34	3.93	7.86	8.36	32.58	15.20	15.34	15.69	13.62	8.76	5.35	136.56		
Alta Vista	6.01	1.90	3.08	6.46	4.90	23.50	10.69	13.58	15.23	6.52	10.84	4.02	106.73	94.56	
Tipperary	9.42	2.69	3.21	7.35	6.55	18.99	11.22	14.79	16.86	10.10	6.21	5.67	113.06	101.43	
Unity Farm	8.57	2.60	3.42	7.61	6.61	19.02	11.26	14.89	16.93	10.13	6.26	5.71	113.01	100.00	
Middlesex	5.24	1.41	3.60	5.80	8.02	20.27	15.15	13.87	12.11	11.23	7.85	3.99	108.54	95.66	104.54
Mango Creek	8.90	2.23	3.16	5.62	6.36	12.52	14.45	14.56	11.70	6.34	6.40	2.46	94.70	77.62	
TOLEDO															
San Antonio	7.27	2.00	1.67	6.28	7.11	18.92	17.74	15.21	10.81	6.76	4.56	2.45	100.78	82.37	
Punta Gorda Agstat	7.80	2.48	.79	6.51	9.35	29.47	19.85	16.86	14.29	12.69	7.94	2.34	130.371	16.64	149.31
Hunting Caye	16.45	7.51	3.98	9.37	9.83	11.19	11.57	15.65	15.99	15.15	13.89	6.60	137.18		
Punta Gorda Town	8.22	1.27	.49	5.97	7.63	22.65	24.01	15.11	14.72	14.03	7.86	3.70	125.66	133.54	162.93
Barranco	9.80	1.51	1.37	14.42	14.91	39.00	34.59	24.84	19.57	11.80	6.75	4.90	183.46	161.72	

a Six years; *b* Seven years; *c* Five years.

Table 2.

Month	Pressure		Temperature				Humidity	
	Mean Barometric Pressure		Mean Monthly Maximum		Mean Monthly Minimum		Mean Monthly Relative Humidity	
	Belize	Stann Creek	Belize	Stann Creek	Belize	Stann Creek	Belize	Stann Creek
January	30.601	29.890	78.22	82	75.83	66	89%	81%
February	29.940	29.991	77.37	82	73.35	68	84.25%	79%
March	30.171	29.906	81.00	83	77.00	69	88%	75%
April	29.875	29.993	82.00	83	77.00	70	79.50%	79%
May	29.865	29.840	84.00	86	81.00	73	88.46%	77%
June	29.275	29.834	82.88	86	77.84	73	92.25%	80%
July	29.968	29.928	84.00	86	78.00	72	89.00%	76%
August	30.042	29.920	83.36	88	82.66	72	89.76%	75%
September	29.799	29.827	87.14	86	78.18	73	91.90%	79%
October	29.829	29.932	78.00	86	76.70	70	89.21%	78%
November	30.039	29.972	77.37	83	72.69	65	90.48%	73%
December	30.076	30.015	76.20	81	70.70	62	91.00%	76%

APPENDIX II

AGRICULTURAL IMPORTS 1953 AND 1954—CUSTOMS DEPARTMENT FIGURES

Item		1953		1954	
	No.	Quantity	Value $	Quantity	Value $
Cattle for breeding	No.	35	8,728	54	30,216
Cattle for slaughter	No.	—	—	—	—
Poultry for breeding	No.	3,313	2,048	7,246	2,452
Swine for breeding	No.	—	—	9	921
Biscuits— Sweet	x 100 lb.	841	44,852	495	25,526
Unsweetened	x 100 lb.	163	8,100	323	16,064
Butter	x 100 lb.	1,495	125,344	1,530	123,807
Butter substitutes	x ,,	3,292	106,261	3,984	121,843
Cheese	x ,,	1,598	91,914	1,646	91,437
Cocoa, prepared	x ,,	336	22,065	383	29,553
Coffee— Ground	x ,,	187	12,149	194	26,332
Substitutes	x ,,	96	19,886	54	14,193
Eggs, fresh	doz.	4,880	4,443	9,756	7,609
Fish, preserved	x 100 lb.	856	33,287	761	30,058
Rice	x 100 lb.	23,769	323,057	36,642	423,811
Flour	x 100 lb.	88,958	710,519	87,758	605,150
Peas and Beans— R.K.	x 100 lb.	5,971	108,428	966	17,408
Others	x 100 lb.	2,218	41,644	1,164	18,337
Lard and Substitutes	x 100 lb.	10,323	259,454	8,718	269,166
Beef in Barrels	x 100 lb.	1,129	36,144	1,459	55,975
Pork in Barrels	x 100 lb.	2,916	70,337	1,980	56,348
Pork, mess	lb.	—	—	200	75
Preserved Meat, canned	100 lb.	2,303	132,550	1,762	96,819
Ham and Bacon	100 lb.	523	46,743	340	28,611
Milk— Condensed	100 lb.	18,687	479,435	20,872	440,743
Unsweetened	100 lb.	6,402	145,379	4,193	104,296
Powdered	100 lb.	2,114	62,301	1,138	37,321
Sugar—Refined	100 lb.	8,022	81,430	12,193	105,758
Spices	100 lb.	136	15,584	139	12,307
Vegetables—Onions	100 lb.	3,879	35,154	4,585	34,224
Potatoes	100 lb.	6,955	60,793	7,431	48,563
Garlic	100 lb.	130	5,406	164	5,136
Other Fresh	100 lb.	883	12,061	878	10,541
Canned	100 lb.	1,929	50,263	1,108	25,434
Tobacco—Manufactured, Black leaf	lb.			31,340	24,407
Unmanufactured Other	lb.		189,546	74,092	65,890
Cigarettes	lb.			41,249	100,039

AGRICULTURAL EXPORTS 1953 AND 1954—CUSTOMS DEPARTMENT FIGURES.

Item		1953		1954	
	Quantity	No.	Value $	No.	Value $
Bananas	Bunches	27,166	52,236	985	513
Plantains	Bunches	3,729	1,096	1,477	386
Citrus —Grapefruit, fresh	x 100 lb.	32,817	117,345	24,474	106,024
Grapefruit juice	x 100 lb.	7,736	64,280	29,942	273,888
Grapefruit segments, canned	x 100 lb.	45,064	604,457	42,259	552,212
Grapefruit concentrate	lb.	50,000	12,500	1,649	39,215
Grapefruit oil	lb.	4,731	8,393	6,161	12,456
Oranges, fresh	x 100 lb.	3,865	5,046	4,378	3,954
Orange concentrate	x 100 lb.	60	2,820	778	32,005
Orange juice	x 100 lb.	3,430	43,671	9,491	91,032
Orange oil	lb.	1,820	3,315	4,946	4,691
Pineapple, canned	x 100 lb.	—	—	1,182	20,396
Other fruit	x 100 lb.	1,215	2,625	137	295
Vegetables, other	lb.	2,038	149	5,727	308
Spices, Annatto	lb.	—	—	800	157
Maize	x 100 lb.	17,579	53,485	26,585	104,055
Sugar, unrefined	x 100 lb.	18,193	125,525	20,258	145,332
Eggs, fresh	doz.	989	621	381	164
Coconuts	x 100 nuts	14,248	95,451	20,809	118,110
Copra	x 100 lb.	4,027	44,731	3,972	53,153
Cohune— Kernels	lb.	998,158	129,192	309,701	38,198
Oil	galls.	7,938	16,444	—	—
Ramie, fibre	lb.	66,869	25,231	6,442	2,523
Mangrove extracts	x 100 lb.	2,156	9,453	1,976	8,586
Alligator Skins	lb.	5,490	11,010	5,302	15,498
Fish— Fresh	lb.	62,696	16,204	67,712	17,434
Dried	lb.	28,883	5,206	75,927	17,385
Lobsters— Fresh	lb.	14,748	3,019	97,941	31,231
Tails	lb.	143,240	75,288	94,246	75,057
Conch	lb.	8,375	1,237	3,930	503
Hawskbill, Tortoise and other shell	lb.	1,803	3,162	663	1,261
Shrimps	lb.	2,275	1,500	3,475	1,918
Dried Beans	x 100 lb.	501	9,017	46	644

APPENDIX III.

NOTES ON CITRUS INDUSTRY.

(1) *Varieties*:—

Grapefruit .. 90% Marsh seedless; remainder Duncan, Thompson, Macarthy and Davis.

Oranges .. Largely Valencia, maturing October—April, and some Washington Navel, Parson Brown and Hamlyn, maturing August—February.

Plants now budded on Sour Orange Stock.

(2) *Yields*:—

Grapefruit .. Good trees 20—30 boxes; per acre 250—1,000 boxes.

Oranges .. Good trees 4 boxes; per acre 300—boxes.

APPENDIX IV.

LIVESTOCK—SLAUGHTER HOUSE RETURNS

SLAUGHTER HOUSE	CATTLE		SWINE		SHEEP		GOATS	
	No.	Total Carcase Weight lb.	No.	Total Carcase Weight lb.	No.	Total Carcase Weight lb.	No.	Total Carcase Weight lb.
Cayo	183	41,649	432	33,234	20	820	—	—
Benque Viejo	105	23,249	211	20,282	1	22	—	—
Belize	2,625	591,136	5,635	303,307	168	4,848	14	427
Stann Creek	102	30,637	139	13,697	11	428	—	—
Punta Gorda	21	4,726	279	17,072	3	122	2	55
Totals recorded 1954† ..	3,036	691,397	6,696	387,592	203	6,240	16	482
Compare Territorial Totals:—1953	3,250*	698,324*	7,746*	410,576*	237*	7,117*	17	358
1952	3,074	722,023	7,924	458,290	232	7,585	29	510
1951	3,226	811,326	5,828	330,047	156	6,225		
Orange Walk, Corozal:— 1953	147	19,321	716	37,620	12	503	1	25

†Orange Walk and Corozal records incomplete and not included; Orange Walk and Corozal figures for 1953 are quoted for comparison at foot of table.
*First six months of Cayo totals not included.

APPENDIX V

IMPORTS OF LIVESTOCK, 1954.

Year	POULTRY				CATTLE					HORSEKIND		OTHERS	
	Day Old Chicks	Day Old Poults	Geese	Ducks	Bulls	Cows	Heifers	Bull Calves	Heifer Calves	Jack Donkey	Stallion	Dogs	Pigs
1954	6,700	152	40	25	15	8	9	1	1	1	1	11	5
1953	3,125	225	—	—	21	—	19	—	—	—	—	6	—
1952	4,135	—	—	—	156	—	173	—	—	—	—	4	—
1951	2,850	—	—	—	4	—	6	—	—	—	2	11	—

Exports consisted of wild species, birds and fish.

APPENDIX VI

STAFF LIST AT 31st DECEMBER, 1954

Post	*Name*	*Station*	*Remarks*
Director of Agriculture	J. W. D. Goodban	Headquarters	On leave to 8.2.54.
Senior Agricultural Officer ..	G. B. Gregory	Headquarters	
Agricultural Officers	G. A. Southwell	Punta Gorda	Transferred to Grenada 21.12.54
	C. M. Grieve	Stann Creek	
	S. J. A. Williams	Orange Walk	
Agricultural Education Officer ..	C. A. S. Hynam	Central Farm	Sch. D1808
Land Clearing Engineer	J. B. Hutchinson	Central Farm	Sch. D1868
Tobacco Officer	G. L. Wanrooy	Orange Walk	Sch. D2117
Veterinary Officer	F. Manolson	Belize	Resigned 1.12.54
Development Officer	R. Coe	Central Farm	Sch. D1807
Experimental Officer	V. E. Vial	Central Farm	Sch. R473A and D1807A
Livestock Officer	S. S. Dale	Central Farm	On leave from 19.7.54 Sch. D1236
Rice Officer	S. R. Morrison	Belize	Arrived 2.4.54 Sch. D2124
Assistant Agricultural Officer ..	F. F. Orio Jr.	Cayo	On leave from 15.4.54 to 16.8.54
Temporary Agricultural Instructor	E. G. Russell	Punta Gorda	On 3 years Study Leave from 1.8.53
Senior Farm Demonstrators ..	F. F. Orio Sr.	Orange Walk	
	P. B. Lizarraga	Corozal	On leave from 1.10.54
Farm Demonstrators Grade I ..	C. D. W. Atkins	Barranco	On leave from 1.4.54-6.6.54. W. I. Training Course in Jamaica from 15.6.54 to 14.12.54
	H. S. Nelson	Belize	W.I. Training Course in Jamaica from 15.6.54 to 14.12.54
Farm Demonstrators Grade I ..	J. A. Lizama	Louisville	
	J. A. Swasey	Stann Creek	On leave from 1.5.54 to 29.6.54
	I. S. Stephenson	Punta Gorda	
Farm Demonstrators Grade II ..	T. L. Brackett	Stann Creek	
	W. A. Grant	Belize	
	W. J. Baeza	Central Farm	Seconded to Scheme D1236 as Livestock Assistant
	F. Bautista	Succotz	
	T. Ramos	Stann Creek	On leave from 1.12.54 to 31.12.54
Foreman Mechanic	W. A. Saunders	Central Farm	On probation
Mechanic	H. E. Young	Central Farm	Died on 20.11.54
Temporary Farm Demonstrators	N. L. Williams	Stann Creek	On leave from 1.9.54
C.D. and W. Scheme D1807 ..	A. Thompson	Sittee	On leave from 7.7.54 to 6.10.54
	E. Bautista	Carolina	
	A. Gentle	Dump, Toledo	On leave from 1.8.54 to 31.8.54
	E. O. R. Gill	Lucky Strike	
	J. A. Santos	Grace Bank	On leave from 1.5.54 to 11.6.54
	J. Chief	Roaring Creek	
	G. I. Marin	Cayo	On leave from 1.9.54 to 5.11.54
	C. Torres	Yo Creek	
	G. C. Castillo	Punta Gorda	
	J. Gonzalez	Orange Walk	
	W. T. Ebanks	Punta Gorda	
	L. V. Gabourel	Cayo	
	A. P. Bautista	Punta Gorda	
	F. B. Arana	Barranco	
	L. B. Flores	Orange Walk	
	G. Batty	Central Farm	
	N. Marin	Central Farm	
Accountant	L. A. Robateau	Central Farm	Seconded from General Clerical Estab. to C.D. and W. Scheme D1807
Storekeepers and Recorders ..	C. L. Williams	Punta Gorda	C.D. and W. Scheme D.1807
	R. G. Smith	Orange Walk	C.D. and W. Scheme D.1807
	S. B. Daniels	Central Farm	C.D. and W. Scheme D.1807
	F. J. Bradley	Stann Creek	C.D. and W. Scheme D.1807

APPENDIX VII

PLANT AND SEED INTRODUCTION, 1954

Cashaw, *Prosopis chilensis*	seed	Department of Agriculture, Jamaica
Indigofera hirsuta	seed	Department of Agriculture, Guadeloupe, F.W.I.
Crotalaria sericea	seed	Department of Agriculture, Guadeloupe, F.W.I.
Crotalaria juncea	seed	Department of Agriculture, Guadeloupe, F.W.I.
Crotalaria grantiana	seed	Department of Agriculture, Guadeloupe, F.W.I.
Crotalaria spectabilis	seed	Department of Agriculture, Guadeloupe, F.W.I.
Crotalaria breviflora	seed	Department of Agriculture, Guadeloupe, F.W.I.
Crotalaria intermedia	seed	Department of Agriculture, Guadeloupe, F.W.I.
Crotalaria retusa	seed	Department of Agriculture, Guadeloupe, F.W.I.
Crotalaria verrucosa	seed	Department of Agriculture, Guadeloupe, F.W.I.
Crotalaria usaramoensis	seed	Department of Agriculture, Guadeloupe, F.W.I.
Granadilla, *Passiflora quadrangularis*	seed	Director of Agriculture, Trinidad
Garcia nutans	seed	H. W. Turner, Corozal, ex Florida
Cryptostegia grandiflora	cuttings	
Southland Tomato	seed	U.S. Department of Agriculture, Vegetable Breeding Centre, South Carolina
T 2887A-I-C Tomato	seed	U.S. Department of Agriculture, Vegetable Breeding Centre, South Carolina
T 2826-5-J-A Tomato	seed	U.S. Department of Agriculture, Vegetable Breeding Centre, South Carolina
T 2826-5-4-A Tomato	seed	U.S. Department of Agriculture, Vegetable Breeding Centre, South Carolina
Java grass, *Polytrias praemorsa*	cuttings	Federal Experiment Station, Puerto Rico
Manila grass —*Zoysia japonica*	cuttings	Federal Experiment Station, Puerto Rico
Psophocarpus tetragonolobus	seed	C.D.C. Cacao Project
Woolly Pyrol (Black gram) *Phaseolus mungo*	seed	C.D.C. Cacao Project
"*Pois rouge*"—Economic	seed	Department of Agriculture, St. Lucia
"*Pois chousse*"—Economic	seed	Department of Agriculture, St. Lucia
Ceratonia siliqua	seed	Sub-Tropical Experiment Station, U.S.A.
Psidium cattleianum	seed	Sub-Tropical Experiment Station, U.S.A.
Wheat C 5: Tropical wheat	seed	Mexico
Pinguin	seed	Mexico
Ornamental Cupressus *sp.*	seed	Mexico
Citrus, variety *Karna*	seed	University of California, U.S.A.
Citrus, variety *Poncirus trifoliata*	seed	University of California, U.S.A.
Rangpur lime	seed	University of California, U.S.A.
Troyer Citrange	seed	University of California, U.S.A.
Cleopatra Mandarin	seed	University of California, U.S.A. and University of Florida.
Wild Grapefruit, *C. paradisi*	seed	Imperial College of Tropical Agriculture, Trinidad
Tobacco:—		
Dixie Bright 101	seed	Beltsville, Maryland, U.S.A.
Dixie Bright 102	seed	Beltsville, Maryland, U.S.A.
Avocado Pears:—		
Pollock		Republic of Honduras
Simmons		Republic of Honduras
Hickson		Republic of Honduras
Mangoes:—		
Cambodiana		Agricultural Station, Stann Creek
Haden		Agricultural Station, Stann Creek
Bombay		Agricultural Station, Stann Creek
Paheri		Agricultural Station, Stann Creek
Julie		Agricultural Station, Stann Creek
Sunflower var. Hungarian	seed	Department of Agriculture, Ibadan, Nigeria
Sunflower var. Sunrise	seed	Department of Agriculture, Ibadan, Nigeria
Sunflower var. Advanced Hybrid	seed	Department of Agriculture, Ibadan, Nigeria
Cowpeas (Parin Wale) ex Zonkwa	seed	Department of Agriculture, Ibadan, Nigeria
Cowpeas (Gishiri Futa) ex Daura	seed	Department of Agriculture, Ibadan, Nigeria
Cowpeas ex Kontagora	seed	Department of Agriculture, Ibadan, Nigeria
Cowpeas ex Bida	seed	Department of Agriculture, Ibadan, Nigeria
Inga Laurina, "*Pois Doux*"	seed	Department of Agriculture, Trinidad
Carambola	seed	Agricultural Station, Stann Creek
Japanese Gooseberry	seed	Agricultural Station, Stann Creek
Guavas:—		
Ruby x Stone Acid		Agricultural Experiment Station, University of Florida
Ruby x Supreme		Agricultural Experiment Station, University of Florida
Supreme x Webber		Agricultural Experiment Station, University of Florida
Supreme		Agricultural Experiment Station, University of Florida

APPENDIX VIII

MILK RECORDS CENTRAL FARM DAIRY HERD 1954.

Cow	Origin	Lactation Yield/lb.	No. of days	Average wt. per day/lb.
Charity ..	ex Jamaica	3,901	314	12.4
Truth ..	ex Jamaica	3,663	289	12.6
Faith ..	ex Jamaica	3,827	283	13.5
Beauty ..	ex Jamaica	4,006	249	16.0
Hope ..	ex Jamaica	3,199	247	12.9
Pateince ..	ex Jamaica	635	42	15.0
Damsel ..	local	2,702	234	11.5
Dolly ..	local	2,025	235	8.6
Annie ..	local	4,153	214	19.4
Christmas	local	3,369	171	19.6
Amy ..	local	2,772	167	16.5
Cassie ..	local	3,338	161	20.7
Foxy ..	local	1,946	109	17.8
Isoline ..	local	1,040	48	21.6
Zola ..	local	648	27	24.0

Note: Of the local cattle, all but Amy, Annie and Dolly are related to the imported Holstein bull "Timoshenko" formerly in use on the farm.

APPENDIX IX (1)

(*a*) A CORN SEED DUSTING TRIAL, CENTRAL FARM.

Replicate	Dusted		Not Dusted	
	lb. Corn in Husk/Plot	lb. Grain Per Acre	lb. Corn in Husk/Plot	lb. Grain Per Acre
1	97.25	859	26.50	234
2	145.50	1,285	98.25	869
3	139.00	1,228	130.25	1,151
4	219.25	1,938	93.50	826
Means ..	—	1,327	—	770

Plot size: .. .. .. 1/13.7 acre
Spacing .. .. .. 36 in. rows, 3 seed per hole at 18in. in the row. (ridged)
Planted 28/5/54
Harvested 27/10/54
Seed Dust .. .. .. "Spergon" applied at 4 oz. per 60 lb. seed corn.

(*b*) A CORN SPACING TRIAL, CENTRAL FARM

A comparison of 3 feet by 3 feet which is "normal" milpa spacing, with 18in. by 18 in. each at three seeds per hole.

Replicate	Close Planted		Normal	
	Grain/plot lb.	Grain/acre lb.	Grain/plot lb.	Grain/acre lb.
1	4.99	249	7.57	378
2	4.99	249	3.38	169
3	3.71	185	2.09	104
4	12.1	604	10.48	524
Means	6.4	322	5.88	294

Plot size: 1/50 acre, paired replicates in different fields.

(*c*) A CORN WEEDICIDE TRIAL, CENTRAL FARM.

	Treatment			
	Controls	MCPA	Sodium 2, 4-D	Ester 2, 4-D
	(lb. of corn in husk/plot)			
Block 1 ..	77.75	21.00	30.25	97.75
Block 2 ..	70.00	22.50	26.25	79.75
Block 3 ..	154.50	20.25	14.25	
Block 4 ..	44.50		too wet to apply weedicide	
Means ..	86.68	21.25	23.58	88.75
Grain/acre	766	188	208	784

MCPA applied as 2 pints per acre of "Agroxone 4" one day after planting.

Sodium 2, 4-D applied as 2.5 lb. per acre of "Fernoxone" one day after planting.

Ester 2, 4-D applied as 1 pint per acre of "Shell 40" when the corn 4" high.

Plots 1/13.7 acre.

The excessively wet conditions throughout the growing season made the result of dubious value. It does indicate that pre-emergent spraying did severe damage to the crop but that spraying at the jointing stage was successful in that the crop yield was as good as controls which were hand weeded twice.

(*d*) CORN FERTILIZER TRIAL, PATCHAKAN.

Treatment	Yield in Lb.					
	Cobs/Plot	Std. error	Grain/Plot	Grain/Acre	% Grain	Std. error
C	18.5	0.95	10.7	885	83.6	1.61
N	16.8	0.65	9.7	803	82.2	0.29
P	31.0	2.15	18.0	1,485**	83.5	1.25
K	16.6	1.3	9.6	793	78.3	1.83*
NPK ..	28.4	1.35	16.5	1,359**	82.7	0.44
NP ..	23.3	5.1	13.5	1,113	82.5	1.93
NK ..	20.6	3.7	11.9	986	81.2	2.10
PK ..	26.5	1.5	15.4	1,268**	84.9	1.22

Layout .. .. 4 Randomised Blocks.
Plots .. .. 1/82 acre each 2 rows, 4 ft. apart, 4 seed/hole.
Planted .. .. 7/5/54.
Fertilizer .. .. Applied 10 days after planting.
100 lb./acre each of Sulphate of Ammonia and Triple Phosphate and 75 lb./ acre muriate of potash.
Soil .. .. Heavy grey clay.

ECONOMICS

Treatment	Increase Over Controls (lb./ac.)	Cost of Fert. & Spreading	Value of Increase	Net Return Acre
P	600	$9.06	$19.50	+ $10.44
PK	383	13.61	12.44	— 1.17
NPK	474	19.41	15.40	— 4.01

(*d*) CORN FERTILIZER TRIAL, YO CHEN, COROZAL DISTRICT

	Treatment							
	N	P	K	NPK	NP	NK	PK	Controls
Grain per plot (in lb.)	7.62	8.56	7.31	9.62	7.43	6.25	12.62	8.0
Std. error	1.55	1.99	1.22	1.45	1.48	0.99	0.70	2.59
Grain per acre (in lb.)	576	647	553	727	562	473	954	605

Layout .. 8x8 L.S.
Plots .. 1/75.6 ac.
Soil .. Ramgoat clay
Analysis Diff. between controls and PK not significant.
Fertilizer 100 lb./ac. Sulphate of Ammonia, 100 lb/ac of Triple Phosphate and 75 lb./ac. of Muriate of Potash, side-dressed on when crop 21 days old.

CORN FERTILIZER TRIAL, STA. ELENA ROAD, COROZAL DISTRICT.

	Treatment							
	N	P	K	NPK	NP	NK	PK	Controls
Grain per plot (in lb.)	1.7	3.4	1.6	3.9	4.6	1.4	3.9	2.7
Std. Error	0.43	0.51	0.39	0.55	0.73	0.20	0.49	1.21
lb. grain/acre	130	259	122	293	345	103	293	203

Layout .. 8x8 L.S.
Plots .. .. 1/75.6 ac.
Soil .. .. Xaibe bouldery clay
Fertilizer .. same as for Yo Chen trial above.
Analysis .. Diff. between controls and PK not significant.

A FERTILIZER TRIAL WITH LATE PLANTED CORN AT CENTRAL FARM.

Treatment	Mean Cobs Per Plot (lb.)	Grain Per Acre (lb.)
Controls	16.5	532
N1	16.0	516
NLP1	16.1	518
N1P1K1 ..	13.3	429
N1P2	15.5	500
N1P2K1 ..	17.7	572
N1P2K2 ..	14.1	454
N1P1K2 ..	10.4	335
P1K2	13.2	424
P1K1	16.3	526
P2K1	21.4	690
P2K2	15.4	497

Layout: 3 randomised blocks
Plots: 1/50 ac.
Variety: block 1—Coker 811 hybrid;
blocks 2 and 3—local yellow flint.
Fertilizer: applied at 21 days after planting.
N1 = 15 lb. Sulphate of Ammonia/ac
P1 = 56 lb. Triple Phosphate/ac
P2 = 112 lb. Triple Phosphate/ac
K1 = 56 lb. Muriate of Potash/ac.
K2 = 112 lb. Muriate of Potash/ac

(*e*) A CORN TIME OF PLANTING TRIAL, CENTRAL FARM.

Sowing Date	Yield of Cobs Per Plot (lb.)	Grain Per Acre
1/5/54	43.5±6.5	1,359
8/5/54	28.6±1.3	893
19/5/54	22.6±4.1	707
26/5/54	16.9±4.2	528
1/6/54	12.1±6.9	378

Layout: three randomised blocks.
Plots: 1/48 ac.
Planting: by two-row planter, 36" rows, 20 lb. seed/ac.

APPENDIX IX (2).

(*a*) GERMINATION TRIAL, CANE VARIETIES, CALEDONIA

Variety	Germination %	Std. Error	Significance
POJ2878	50.6	3.6	(control)
B 41211	51.2	2.7	
B 4098	35.2	2.7	**
B 41227	25.4	3.5	**
B 37161	21.6	5.0	**
Mean	36.8		

Layout .. .. .. 5x5 L.S.
Plot size .. .. .. 84 stools/plot (2 plants per stool)
Soil type .. .. .. Louisville clay
Planted 16/11/54
Germination Count .. 6/1/55 (at 51 days)
Planting material not soaked.

(*b*) SUGARCANE VARIETAL X MANURIAL PLOT, TOLEDO AGRICULTURAL STATION

Variety	Lb. Cane Per Plot				Diatraea Infestation	Brix Readings (at 75°)
	All Reps	NPK	FYM	NPK & FYM		
B 45151	139±34				2.7	22.1
B 44227	156±39				2.0	19.4
B 3337	156±48				1.1	21.2
B 45152	173±47				3.9	22.6
B 4362	143±37				8.0	23.0
B 37161	102±23				3.2	21.5
B 4098	111±35				3.7	21.7
B 42231	126±29				4.9	20.9
B 41211	161±23				3.8	20.9
B 34104	103±9				3.0	21.7
Average	137	137	139	134	3.6	21.5

Layout .. .. Randomised block
Plot size .. .. 16 stools
Harvested 9/3/55
NPK=275 lb. acre of 7-14-13
FYM=Farmyard manure, 10 lb. per stool.

APPENDIX IX, (3)

(*a*) CENTRAL FARM GROUNDNUT TRIAL

Variety	Lb. Per Plot	Lb. Per Acre	Time of Maturity
Samaru 38	7.78±1.5	554	120 days
M.P.C.	7.28±1.8	519	120 „
Tennessee Red	7.19±1.9	512	120 „
Valencia	7.03±2.1	501	120 „
Natal Common	6.78±1.9	483	120 „
MG 383	5.77±1.1	411	145 „
MG 372	5.45±1.6	388	145 „
Kano 38	5.14±1.9	366	155 „
Empire Bright	4.97±1.6	354	120 days
MJ 371	4.66±0.6	332	120 „
Bagwariya	4.03±1.9	287	145 „
Spanish 205		236	130 „
Phillipine White	1.06±0.5	114	155 „

(*b*) TREATMENT EFFECTS.

Treatment	Lb. Per Plot	Lb. Per Acre	Increase Over Controls
Controls	4.01±1.7	286	—
Seed Protectant (1) ..	5.63±1.8	389	103
Fertilizer (2)	6.64±2.6	473	187
Fert. plus Lime (3) ..	6.00±2.6	427	141
Seed Dust plus Fertilizer	6.66±0.6	475	189
Seed Dust plus Fert. plus Lime	5.56±2.3	396	110
Seed Dust plus Chemical Weeding (4)	5.82±2.6	415	129
Fert. plus Lime plus Chemical Weeding ..	5.04±2.4	359	73

(1)= "Gerisan" mercurial dust at 3 oz. per 100 lb. seed.
(2)= 300 lb. per acre of 0-12-12 applied 3 weeks after planting.
(3)= 1 ton per acre of local marl.
(4)= pre-emergent application of 4 quarts per acre of "Premerge" (DNOSBP)
Replicates: Controls 20; Fertilizer 48; Seed protectant 48; Lime 36; Chemical weed control 24.
Plot size: 1/71.3 ac.

(*c*) GROUNDNUT VARIETY GROWTH CHARACTERISTICS.

Variety	Growth Form	Reaction to Leaf Spot
Natal Common	Erect	Very susceptible
MG 372	Laxly bunched	Fairly resistant
MG 383	Laxly bunched	Susceptible
Bagwariya	Prostrate	Fairly resistant
Valencia	Bunched	Fairly resistant
M P C	Prostrate	Very susceptible
Kano 38	Bunched, vigorous	Resistant
Phillipine White	Prostrate	Resistant
Empire Bright	Erect	Very susceptible
Samaru 38	Semi-prostrate	Resistant
Tennessee Red	Semi-prostrate	Very susceptible
M J 371	Prostrate	Susceptible
Spanish 205	Erect	Resistant

APPENDIX IX (4)

RICE TRIALS AT STANN CREEK AND PATCHAKAN

Variety	Palm Rice (lb. per Acre)	
	Stann Creek	Patchakan
B.H. Creole	950	1,269
Zenith	998	1,758
Blue bonnet	950	1,567
Patna	1,054	778
Century Patna	997	864

FERTILIZER TREATMENTS (PATCHAKAN ONLY)

Controls (no fertilizer) ..	1,471
Nitrogen	1,325
Phosphate..	875
Potash	897
Complete NPK ..	1,668

Plot size	1/47.6 ac.	1/74.5 ac.
Replicates	8	10
Nitrogen	120 lb. ac. of Sulphate of Amonia	
Phosphate	100 lb. ac. of Triple Phosphate (40%)	
Potash	75 lb. ac. of Muriate of Potash (55%).	

APPENDIX IX (5)

PINEAPPLE FERTILIZER TRIAL, COROZAL DISTRICT

Treatment	Average Plant at 14 Months inches	Weight of Fruit(lb.)	Number of Fruit Weighed
Controls	32±6	4.5	51
Nitrogen	33±5	4.6	39
Phosphate	34±6	4.2	48
Potash	32±4	4.5	49
Complete NPK	36±5	4.5	51

Layout .. .. two randomised blocks
Plot size .. .. 50 sq. yards
Variety .. .. horse pines, planted August 1952.
Treatment.. .. N=60 lb. per acre of Sulphate of Amonia
P=60 lb. per acre of triple phosphate
K=30 lb. per acre of Muriate of Potash
Fertilizer applied twice per annum.

APPENDIX IX (6)

BROOMCORN FERTILIZER TRIAL, SAN MAXIMO

Weight (lb. per ac.)	C	N	P	K	NP	NK	PK	NPK
Straw	284	213	346	277	339	277	381	353
Seed	367	360	374	346	534	274	586	555

Layout .. two randomised blocks
Plots .. 95 sq. yards, intercropped between plant cane.
Soil .. .. shallow red clay over marl.
Fertilizer .. applied as side-dressing when crop 6" high 100 lb. per acre each of Sulphate of Ammonia, Triple phosphate and Muriate of Potash.

(*a*) RED KIDNEY BEAN FERTILIZER TRIAL, CENTRAL FARM.

	TREATMENT							
	C	P1K1	P2K1	P2K2	P1K2	NP2K1	NP1K1	P2
Yield (lb./ac.	572	566	576	648	541	859	673	637
ECONOMICS:—								
Gross Crop Value/ac. ($)	103	102	104	117	97	155	121	115
Value of Increase ($)	—	—	—	14	—	52	18	12
Fertilizer Cost & Spreading ($) ..	—	6.43	11.27	16.13	11.29	14.17	9.33	5.22
Net gain/ac. ($)	—	loss	loss	loss	loss	37.49	8.85	6.48
Effect of lime (1 ton/ac.)	limed 646 lb./ac.					no lime 621 lb./ac.		

Layout: 6 Randomised Blocks
Plots: 1/75 ac.
Fertilizer: P1 —40lb. Triple Phosphate/ac.
P2 —100 lb. Triple Phosphate/ac.
N1 —50 lb. Sulphate of Ammonia/ac.
K1 —20 lb. Muriate of Potash/ac.
K2 —100 lb. Muriate of Potash/ac.
Soil: Heavy red clay.

(*b*) EFFECT OF MERCURIAL SEED PROTECTANT ON RED KIDNEY BEANS, CENTRAL FARM.

DUSTED:		NOT DUSTED:		INCREASE ACRE DUE TO DUSTING:
Per Plot	Per Acre	Per Plot	Per Acre	
8.77±2.7	866	8.49±1.73	838	$4.95.

Layout: 7 paired replicates.
Plots: 1/98.7 ac.
Duties: "Gerisan" dry, 3oz./100 lb. seed beans.
Soil: Red clay loam.

(*c*) RED KIDNEY BEAN SPACING TRIAL, CENTRAL FARM.

	SPACING				
	12 inch (one seed/hole)	24 inch (three seed/hole)	36 inch (three seed/hole)	24 inch plus Lime	24 inch plus Lime plus Fertilizer
Seeding rate/acre	18	30	21	30	30
Yield/plot (lb.)..	8.57	9.26	7.45	7.51	6.81
Yield/acre ..	648	700	563	568	515

Layout: Randomised block, 5 replicates.
Plots: 1/75 acre.
Lime: 1 ton/acre.
Fertilizer: 300 lb./acre of 0-12-12.

(*d*) R.K. BEANS, SUMMARY OF DISEASE RECORDED IN FIELD, ACCORDING TO SEED SOURCE, CENTRAL FARM.

Plot No.	1954 Marketing Board Seed				1953 Marketing Board Seed				Toledo Seed (saved since 1949)			
	No. of Plants	Pre-Emergence Loss (%)	Sclerotium (%)	Virus yellows (%)	No. of Plants	Pre-Emergence Loss (%)	Sclerotium (%)	Virus yellows (%)	No. of Plants	Pre-Emergence Loss (%)	Sclerotium (%)	Virus yellows (%)
1	575	12.3	5.0	—	726	6.7	2.20	—	686	7.6	4.2	—
2	701	7.1	2.28	—	675	3.4	3.0	3	646	11.0	4.6	—
3	704	6.0	2.72	—	689	3.5	6.40	—	668	12.0	4.9	—
4	730	3.4	1.09	1	707	2.0	4.1	1	635	8.0	7.5	—
5	663	5.8	1.21	—	741	4.6	1.8	—	711	9.7	2.1	—
6	690	6.1	2.32	—	749	4.5	2.7	2	726	5.9	2.6	—
Mean and Totals	677	6.8	2.44	0.16	714	4.1	3.37	1.0	678	9.03	4.3	NIL

THE EFFECT OF COPPER SPRAYING ON BEAN YIELDS

	SEED SOURCE		
	1954 Marketing Board	1953 Marketing Board	Toledo Seed
Unsprayed (lb./plot)	2.1±0.2	2.0±0.2	2.6±0.2
Sprayed (lb./plot)	3.8±0.16	2.9±0.1	4.4±0.5

Means (all sources):—Unsprayed: 2.25±0.21; Sprayed: 3.70±0.26
A highly significant increase in yield of 64% due to copper spraying.

Layout: Single row plots. 6 replicates.
Spray: 1 oz. "Perenox" and ½ oz. wettable DDT in one gallon of water.

APPENDIX IX (8)

A CHEMICAL WEEDKILLER TRIAL AGAINST "WILD PLANTAIN" (*CANNA INDICA*) ON NEWLY CLEARED LAND AT CENTRAL FARM

Treatment	Concentration of Plants per unit Area (Mean of 10 Frames per Plot)			
	Wild Plantain		Grasses and Sedges	
	Before spraying	54 days later	Before spraying	54 days later
Controls	10.2	11.2	2.2	5.8
Sodium chlorate 10 lb./ac.	12.9	16.0	5.3	5.8
Sodium chlorate 30 lb./ac.	11.9	8.2	1.7	4.6
2, 4-D Ester, 2 qts./ac.	4.6	7.4	4.7	4.6
2, 4-D Sodium salt, 2.5 lb./ac.	5.9	5.7	1.3	5.8
2, 4, 5-T, 1.25 qts. plus 5 gals. diesel/ac.	16.6	13.9	2.9	8.7
2, 4, 5-T, 2.5 qts./ac. and no diesel	15.1	12.1	4.7	7.5
M.C.P.A. 6 pints/ac.	6.1	2.5	3.2	11.3
D.N.O.S.B.P. ("Premerge") 7.5 qts./ac.	13.4	14.2	3.6	4.9
D.B.O.S.B.P. (Dow General) 5 pints plus 5 gals. diesel/ac.	8.1	8.2	2.8	0.9
Sodium Pentachlorophenate 16 lb./ac.	10.7	14.3	3.9	0.5
Dicholoropropionic Acid 5 lb./ac. plus wetter	11.6	10.6	4.4	3.4
Dicholoropropionic Acid 10 lb./ac. "	11.7	12.0	5.7	7.4

APPENDIX X.

FINANCIAL STATEMENT 1954

EXPENDITURE

Head 2—Agriculture

Subhead		
1.	Personal Emoluments	$48,184
2.	Travelling and Subsistence	3,511
3.	Transport Allowances	1,297
4.	Running and Maintenance Costs of Vehicles	4,357
5.	Revenue Producing Operations	11,350
6.	Labour	8,941
7.	Agricultural Extension Work	1,060
8.	Veterinary Drugs	6,082
9.	Control of Pests and Diseases	1,155
10.	Housing Rentals	1,153
11.	Implements and Tools	984
12.	Visits of Specialists	702
13.	Upkeep of Temporary Buildings	484
14.	Boots and Bags for Field Staff	147
15.	Boats and Doreys	299
16.	Upkeep of Farm Equipment	299
17.	Freight on Plants, etc.	134
18.	Scientific Equipment	—
19.	Incidentals	122
20.	Supervision, Maintenance of Grounds, Offices, Buildings	10,702
21.	Experiments and Trial Plots	8,522
22.	Commercial Crops and Operations	6,467
23.	Purchase of Vehicles	4,977
24.	Mechanical Equipment for Baking Pot Estate	750
25.	Purchase of Special Equipment	81
26.	Veterinary Equipment	1,066
	TOTAL EXPENDITURE	$122,826

Colonial Development and Welfare Schemes:

D981E-F	Completion of Central Farm	$1,956
D981 G	Completion of Central Farm (Electricity)	20,005
D981 H	Completion of Central Farm (Water Supply)	21,377
D1108 (249)	Training of Mr. L. V. Gabourel	497
(250)	Training of Mr. T. T. Ramos	865
(251)	Training of Mr. J. A. Swasey	892
(318)	Training of Messrs C. D. W. Atkins and H. S. Nelson	1,610
D1236	Livestock Officer	4,656
D1366	Minor Economic Scheme (Cohune Survey)	47
	Minor Economic Scheme (Animal Disease Survey)	3,427
	Minor Economic Scheme (Pineapple Cultivation)	66
D1807	Staff for Agricultural Department	28,209
D1808	Agricultural Education	14,600
D1816 & A	Quarters for Farm Demonstrators	2,000
D1819	Scatter Plot Trials	12,694
D1824	District Agricultural Stations	23,113
D1868	Land Clearing Scheme	50,744
D1824	District Agricultural Stations	23,113
D1868	Land Clearing Scheme	50,744
D1914	Livestock Scheme	40,641
D2117	Tobacco Officer	19,266
D2124	Rice Officer	12,767
D2376	Soil Conservation Demonstration, San Antonio	113
R473A & D1807A	Experimental Officer	5,444
	TOTAL: C. D. & W. SCHEMES	$264,989

Head 4: Subhead.

10.	Sale of Government Stores	$578
26.	Receipts from Central Farm	15,270
27.	Sale of Produce and Plants, etc., Agricultural Stations	9,437
28.	Fees for Veterinary Officer's Services	22
	Total, Revenue	$25,307

Scheme:	D1819	Scatter Plot Trials	225
	D1824	District Agricultural Stations	841
	D1868	Land Clearing Scheme	10,209
	D1914	Livestock Scheme	856
	D2117	Tobacco Officer	82
		Total Revenue: C.D. & W. Scheme	$12,213

APPENDIX XI.

LOCAL WEIGHTS AND MEASURES

1 quartia=¼ almud=2½ quarts
1 almud=5 quarts
1 benequen=15 quarts
1 shushack=4 almuds=20 quarts
1 cargo=60 quarts=12 almuds

---

1 barrel=110 quarts

---

300 ears of corn in husk=60 hands
1 hand=5 ears, i.e. the number picked up in each hand when counting ears
60 hands=300 ears=(should shell out to) 1 cargo.

---

1 block chicle=1 pesada=1 arroba=25 lbs.
4 pesadas or 4 arrobas=100 lbs.=1 quintal.

---

1 mecate=1 task—25 yards x 25 yards—approx. one-eighth acre
16 mecates=1 manzana—approx. 2 acres
(8½ varas plus 1 machete length=1 mecate).

---

1 cart-load firewood=300 sticks at 3ft. long.

---

1 fathom=6 feet=1 brassada
("Brassada" is literally the distance between outstretched arms (*brassos*)).

CITRUS—
A unit of grapefruit is a 70lb. box
A unit of oranges is a 90lb. box
A/2 juice carton contains 24x12oz. tins
A/10 juice carton contains 6 tins approx. 1 gall. each
404 juice carton contains 12x24oz. tins
Barrels contain 43 gallons

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4 British Honduras Dollars equal £1 Sterling.
1 British Honduras Dollar equals Five Shillings Sterling.